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The Soviet Maritime Arctic

Proceedings of a Workshop Held May 10-13, 1987
by the Marine Policy Center
of the
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543 USA

Edited by

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Woods Hole, Massachusetts 02543

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Marine Policy Center

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Резюме

В настоящем отчете подводятся итоги международного семинара по проблемам относящихся к Советскому Союзу районов Северного Ледовитого океана. В семинаре, проходившем с 10 по 13 мая 1987 года в Центре морских исследований Института океанографии в городе Вудс-Хол, приняли участие двадцать восемь специалистов из Канады, Великобритании, Норвегии и Соединенных Штатов. Проведение семинара дало возможность западным ученым рассмотреть и обсудить внутреннюю и внешнюю политику Советского Союза в отношении Северного Ледовитого океана. На междисциплинарных заседаниях семинара обсуждались стратегические, географические, исторические, юридические, научные, технические, транспортные и геополитические проблемы, а также вопросы освоения природных ресурсов. В настоящий отчет включено общее описание работы семинара, тезисы пятнадцати из прочитанных на нем докладов (восемь из них с рисунками и таблицами) и отредактированная запись заключительной дискуссии. Приложения к отчету содержат окончательный вариант программы семинара, список его участников и перечень вопросов для обсуждения, предложенных участниками семинара в период подготовки к его проведению. Специалисты, участвовавшие в работе семинара, пришли к следующим основным выводам: история освоения Россией Северного Ледовитого океана насчитывает свыше 500 лет; Советский Союз располагает крупнейшим в мире арктическим флотом, который используется главным образом для перевозки грузов и освоения природных ресурсов; русский национализм играет, возможно, очень важную роль в стремлении Советского Союза расширять свое присутствие в Арктике; деятельность СССР в арктических районах связана с интересами, относящимися к самым разным областям (экономика, оборона, охрана окружающей среды, разведка и использование природных ресурсов и т.п.), причем ни один из этих интересов не является преобладающим; действия Советского Союза в прошлом указывают на возможность его участия в международных соглашениях по Арктике; принятые за последние годы советские законы можно рассматривать как свидетельство того, что принципы справедливого учета интересов, зафиксированные в Конвенции по морскому праву, в основном приемлемы для Советского Союза и что крайние догматические взгляды на правовой статус арктических морей не находят отражения в его законодательной и государственной практике.

Abstract

This report is a summary of an international workshop on the Soviet Maritime Arctic held May 10-13, 1987 by the Marine Policy Center of the Woods Hole Oceanographic Institution. Twenty-eight scholars from Canada, Great Britain, Norway and the United States participated. The workshop provided a forum for Western scholars to examine and discuss Soviet domestic and international policies regarding the Arctic Ocean. Interdisciplinary workshop sessions addressed the following concerns: strategic, geographic, historical, legal, scientific, technological, transportation, geopolitical and resource development. This report includes an overview of the workshop, 15 abstracts of contributed papers (8 with figures or tables), and an edited transcript of the concluding discussion session. Appendices include the final program, a list of participants and a list of discussion questions contributed by the participants prior to the workshop. Several key findings of the workshop include: more than 500 years of Russian involvement in the Arctic Ocean; USSR operation of the world's largest polar fleet primarily for transportation and resource development; Russian nationalism as a possible driving force in Soviet activity in the Arctic; Soviet concerns for the Arctic representing an amalgamation of interests (economic, security, environmental, resource, others), none of which alone is predominant; probable Soviet participation in international Arctic regimes based on past actions; and, Soviet legislative enactments which indicate that the balance of interests embodied in the Law of the Sea Convention are largely acceptable to the Soviet Union and that extreme doctrinal views on the legal status of polar seas do not enjoy support in law or State practice.

WORKSHOP OVERVIEW

Introduction

The Arctic Ocean is a region of increasing importance for political, scientific, environmental and strategic reasons. Primarily due to its geographic location (see Figure 1), the Soviet Union is perhaps the dominant nation in the Arctic. Thus, it is important for Western scholars to examine Soviet domestic and international policies in the Arctic Ocean. In order to provide an opportunity to report on the status of such examination and consolidate our knowledge about the Soviet Union's use of its maritime Arctic region, the Marine Policy Center of the Woods Hole Oceanographic Institution organized an international forum entitled "Workshop on the Soviet Maritime Arctic" at Woods Hole on May 10-13, 1987. A grant from the John D. and Catherine T. MacArthur Foundation allowed the participation of 28 recognized scholars from Canada, Great Britain, Norway and the United States. This WHOI Technical Report and a book in preparation will present a unique and comprehensive review of the Soviet Union's relationship to the Arctic Ocean.

Workshop Format

The workshop was divided into six primary sessions with fourteen formal papers presented. A wide spectrum of concerns was addressed by the papers - historical, cultural, legal, strategic, geopolitical, transportation, scientific, technological and resource development. Following a set of formal presentations for each session, a group discussion was held using as guides questions submitted prior to the workshop. These discussion questions can be found in Appendix III. A final roundtable discussion of all topics was held on the final morning of the workshop. An edited transcript of this discussion appears in the third section of this report.

Principal Findings

Several principal findings of the workshop include:

* The history of Russian interaction in the Arctic Ocean spans more than 500 years. The Northern Sea Route across the top of Eurasia was in commercial use by 1600 and much of that coast had been explored and charted with surprising accuracy by 1743. Nothing compares to this legacy in the North American Arctic.

* A hypothesis suggests that Russian nationalism may be the primary driving force for the record of success the Soviet Union has enjoyed in the Arctic. Frankly Griffiths' proposition is that this success is founded not so much on the perceived economic and security needs of the Soviet state, as on the positive cultural attachments to the Arctic of the Russian people.

* Soviet legislative enactments indicate that the balance of political, economic, legal, strategic and other interests embodied in the Law of the Sea Convention are largely acceptable to the Soviet Union. This has

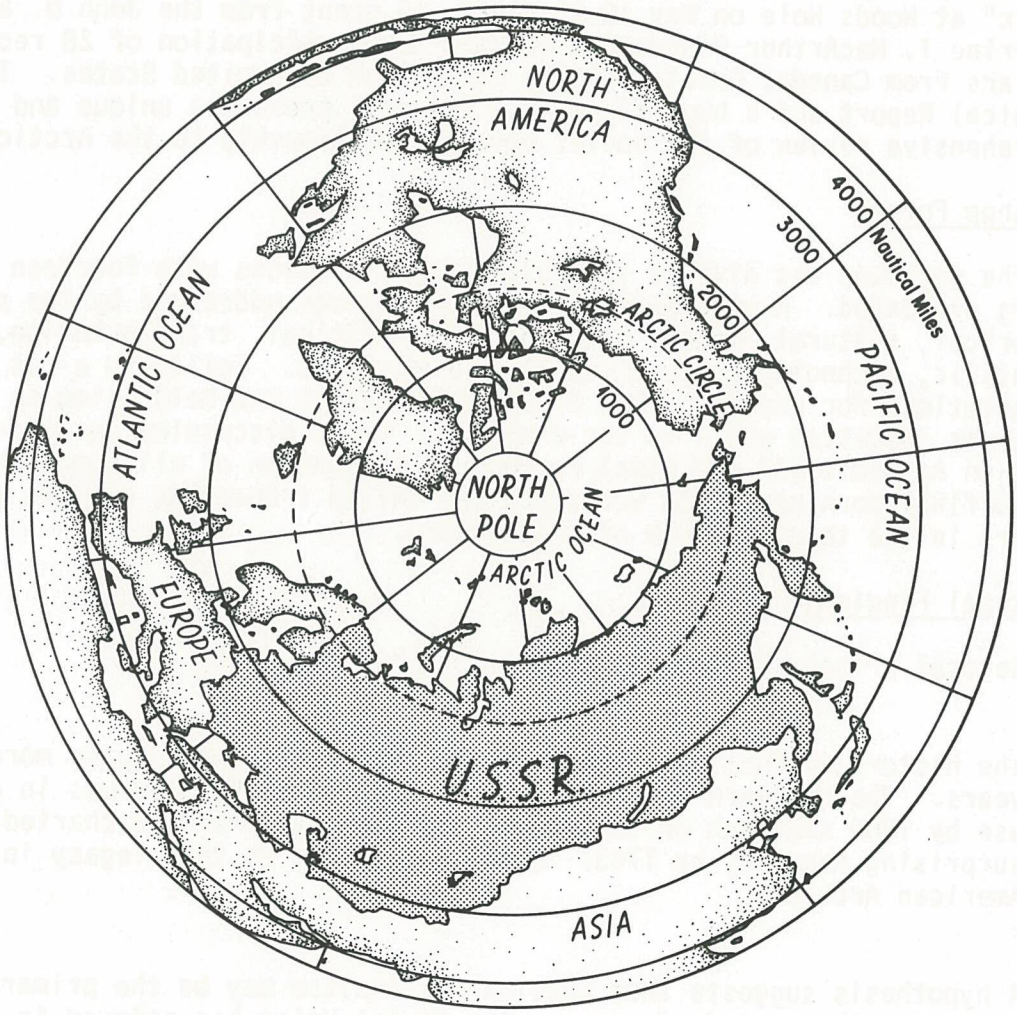

Figure 1 A polar perspective of the Soviet Union's proximity to the Arctic Ocean.

important implications for the Arctic Ocean. Evidence shows that some of the more extreme doctrinal characteristics of the legal status of the seas north of the Soviet coast do not enjoy support in law or in state practice. In particular, those characterizations of sector lines as state boundaries (lines extending from the Soviet northern coast directly to the North Pole) are today without any support whatever, and so too are many of the historic seas (or bays) doctrines that date from periods of USSR maritime weakness. Recent Soviet legislation on the creation of joint enterprises with capitalist and Third World countries opens up new opportunities for joint resource exploitation in the Arctic which a number of Western nations may wish to pursue.

* It is obvious that the Arctic Ocean is an important military theater for the Soviet Union. According to Soviet definitions that theater contains not only the Central Arctic basin but includes all adjacent Arctic seas. The Barents Sea serves both strategic and defensive purposes in Soviet naval thought. However, the natural features of this sea, such as ice conditions, icebergs and restrictive depths, have profound influences on the operations of the Soviet Navy's Northern Fleet.

* The Soviet Union operates the world's largest fleet of polar ships, the majority of which are used along the Northern Sea Route. Technological advancement (including nuclear power for icebreaking ships), adaptation and technology transfer from the West have played leading roles in the development of this diverse fleet. Estimates from the Soviet press place the current level of operations at approximately 600 freighting voyages carrying six million tons of cargo across the Soviet Maritime Arctic. Year-round navigation has been maintained in the Kara Sea for the carriage of Noril'sk nickel ore to Murmansk. The transport of gas industry freight, largely pipes, to Western Siberia and the Yamal Peninsula has also been an important use of the Northern Sea Route.

* The Soviet Arctic offshore area, including the Barents, Kara, Laptev and East Siberian Seas, is the largest unexplored oil-gas region in the world. The first exploratory well on the Soviet Arctic continental shelf was drilled in 1982 in the Barents Sea and Soviet plans call for extending exploration east and into the Kara Sea. Geological structures of the West Siberian onshore where major gas fields have been developed may well play a key role in Soviet plans for potential oil-gas resources in the offshore Arctic.

* Soviet Arctic scientific and engineering efforts have been extensive. Technical innovation in Arctic shipping, ice forecasting and overcoming permafrost problems has been legendary. Contrary to generally held views, there is substantial openly published Russian material available about the Soviet Arctic. In particular, the basic scientific efforts have been extensively published for scrutiny by the world's scientific and academic community.

* It is widely believed that the Soviet Union considers the Arctic too sensitive because of national security to be an appropriate focus for international cooperation. In fact, the USSR belongs to conservation regimes involving fur seals and polar bears, the management regime for the Svalbard archipelago (the 1920 Treaty of Spitzbergen), and an array of broader multilateral regimes (one being the International Whaling Convention of 1946) applicable to the Arctic. Recent events point to future Soviet cooperation in the region. General Secretary Gorbachev has called for increased Arctic cooperation including joint scientific research and a comprehensive plan for protection of the northern environment.

* Canada and the Soviet Union have pursued the promise of bilateral cooperation in Arctic sciences since the 1970s. During the period 1984-87 12 Canadian and 12 Soviet delegations were exchanged that concentrated on four major themes: geoscience and arctic petroleum; northern and arctic environment; northern construction; and, ethnology and education. A February 1987 Protocol extends the range of program activities and points to a new era of Canadian-Soviet relations in the Arctic.

* A key, final conclusion of the workshop was the observation that Soviet concerns in the Arctic represent an amalgam of economic, environmental, resource, political, cultural and strategic interests. William Butler stated that it would be wrong to single out any one of these interests as predominant to the exclusion of the others. In particular, excluding the Barents Sea (where the Soviet Union operates the world's largest naval force), it is no longer evident that security interests are as sensitive as in previous years.

Summary

A growing international interest in the Circumpolar North makes the study of the Soviet Maritime Arctic both timely and relevant. The results of this workshop and publication of a book from the contributed papers will hopefully fill a critical void in the scientific, marine and policy literature on the Soviet Arctic. The participating scholars and the Woods Hole Oceanographic Institution gratefully acknowledge the generous support of the John D. and Catherine T. MacArthur Foundation for this workshop.

THE ARCTIC OCEAN IN RUSSIAN HISTORY TO WORLD WAR II

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The history of the interaction of Russia with the Arctic Ocean spans over 500 years. Muscovy expanded to the White Sea and the Barents Sea when the armies of Ivan III conquered Novgorod in 1478, thus giving Russia first access to the sea.

Commercial use of substantial parts of the present Northern Sea Route began very early. Thus, a sea route from Arkhangel'sk via the Barents and Kara Seas to the fur trade center of Mangazeya in Western Siberia was in steady use between approximately 1600 and 1619. Farther east, by 1645, commercial vessels were operating along the Arctic coast between the Kolyma and the Lena Rivers. Archeological evidence from northern Taymyr would indicate that fur traders may well have also been making voyages along the central section of the Northern Sea Route by this date.

For a variety of reasons this early use of the Northern Sea Route fell into abeyance by the late 17th century. But in the first half of the 18th century, especially due to Peter the Great's drive, officers of the Russian Navy made repeated determined efforts at exploring and charting the whole of the Northern Sea Route. By far the best known of these efforts was the Great Northern Expedition of 1733-1743 under the overall command of Vitus Bering. As a result, most of the northern coast of Eurasia had been explored and charted with amazing accuracy by 1743.

The next series of important developments were all made by foreigners such as Nordenskiold, Wiggins and Nansen. No doubt spurred by these foreign initiatives, the Russian government sponsored such initiatives as Baron Toll's expedition aboard ZARYA in 1900-1902 and the Arctic Ocean Hydrographic Expedition of 1910-1915, whereby the small icebreakers TAYMYR and VAYGACH surveyed and charted the entire route from the Bering Strait to the Yenisey and also discovered Severnaya Zemlya in 1913.

Under the Soviet regime strong emphasis was placed on using the Kara Sea section of the Northern Sea Route as a commercial route and by 1930 substantial fleets of ships were plying to and from the mouth of the Yenisey from the west. Development of the rest of the route had to wait for the establishment of Glavsevmorput' in 1932 and the accomplishment of a successful through-passage in one season; this was finally achieved by FEDOR LITKE in 1934. Throughout the remainder of the 1930s movement of freight along the whole of the Northern Sea Route, but even more importantly to the mouths of the Siberian rivers where river fleets were steadily being built up, had reached impressive proportions. As a result, during World War II the Northern Sea Route could be used for the movement of significant amounts of Lend-Lease freight from American and Canadian Pacific ports to Siberian arctic ports.

THE ARCTIC IN THE RUSSIAN IDENTITY

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The Soviets have accomplished a great deal in the Arctic. This paper explores the proposition that their record of relative success is ultimately founded not so much on the perceived economic and security needs of the Soviet state, as on the positive cultural attachments to the Arctic of the Russian people -- the predominant nationality in the USSR. To be more specific, the hypothesis is that Russian nationalism is the prime driving force in the Arctic performance of the Soviet Union.

The other major ice states are governed from southerly capitals by decisionmakers who have little direct experience of Arctic conditions. The Arctic is sufficiently difficult as an operating environment that for national decisionmakers to succeed in their objectives they must have positive attachments to the region. In the absence of such attachments, policy proposals will have to be argued on their merits against southern-oriented projects that tend to be less expensive and problematic. Given such attachments, however, policy proposals will not have to be raised from the ground up each time and, once decided, will be more readily implemented.

Russian-language novels, central media coverage and naval discussions of the Arctic will provide an idea of how Russians look upon the Arctic region, and of how they define themselves and their place in the world by reference to it. Needless to say, at a time when the leadership is encouraging fundamental internal reforms to make the Soviet way of life globally competitive in the next century, soul-searching about the Russian identity should now be rather more prevalent than in the past. How the Arctic might fit into a reassessment of Russia's future prospects is an additional concern of the paper.

THE LEGAL REGIME OF THE SOVIET ARCTIC

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The waters north of the Soviet coast in the Arctic serve as two sea routes: the Northeast Passage which vessels may traverse from Atlantic to Pacific; and the Northern Sea Route, a cabotage route which runs chiefly through the territorial sea and Exclusive Economic Zone of the USSR from Leningrad in the West to Vladivostok in the East and is restricted in law to Soviet flag vessels or to vessels under Soviet charter.

Since the signature of the United Nations Law of the Sea Convention (LOS Convention) in December 1982, the Soviet Government has been giving effect to the Convention provisions in a series of legislative enactments. These include the 1982 Law of the USSR State Boundary, which establishes a 12-mile territorial sea and makes provision for the establishment of straight baselines along the Soviet coast as appropriate; amendments to the 1968 Edict on the Continental Shelf of the USSR which implement certain provisions of the LOS Convention; the establishment of an Exclusive Economic Zone of 200-miles along Soviet coasts, including the Arctic, pursuant to 1984 legislation; Rules establishing the right of innocent passage for foreign warships in the territorial waters of the USSR, confirmed in 1983; and Decrees of 7 February 1984 and 15 January 1985 fixing the coordinates of straight baselines respectively along the Pacific coast and along the Arctic, Baltic, and Black Sea coasts of the USSR. In addition, there have been several decrees or statutes appertaining to the protection of the marine environment in the Arctic and to the procedure for conducting marine research.

These developments indicate that the balance of political, economic, legal, strategic, and other interests embodied in the LOS Convention are largely acceptable to the Soviet Union and that some of the more extreme doctrinal characteristics of the legal status of seas north of the Soviet coast do not enjoy support in law or in State practice. In particular, those characterizations of sector lines as State boundaries are clearly without any support whatsoever, and so too are many of the historic seas or historic bays doctrines that date from periods of Soviet maritime weakness.

Attitudes toward innocent passage of foreign warships, however, give some concern in light of the LOS Convention as evidenced in the Black Sea incident of March 1986. Under the interpretation of Soviet legislation and the LOS Convention then advanced, foreign warships would not enjoy a right of innocent passage through any of the Soviet territorial waters along the northern Arctic coast.

Recent Soviet legislation on the creation of joint enterprises with capitalist and Third World countries opens up new opportunities for joint resource exploitation in the Arctic which a number of Western nations may wish to pursue.

Soviet concerns in the Arctic represent an amalgam of economic, environmental, resource, political, cultural, and strategic interests significantly protected and furthered, it would seem, from the jurisdictional point of view by the LOS Convention and implementing legislation. It would be wrong to single out any one of these interests as predominant to the exclusion of the others; in particular, excluding the Barents Sea area, it is no longer evident that security interests are as sensitive as before.

SOVIET MILITARY OBJECTIVES IN THE ARCTIC THEATER

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Several postwar developments have ensured that the Arctic theater will occupy center stage in any future world conflict: (1) the nuclear submarine has eliminated the Arctic icecap as a barrier to the strategic mobility of the superpower navies, permitting the side that controls the theater to exploit its central position between the North Atlantic and North Pacific Oceans; (2) the intercontinental bomber and ICBM have made the Arctic the shortest line of approach from one superpower to another; (3) the SLBM has enabled the USSR to deploy its strategic submarines close to home where they can more readily be protected; (4) the general purpose forces and the infrastructure that support this strategic reserve are also located in the Arctic theater.

For these reasons it is likely that the Soviets will attempt, in the event of war between the superpowers, to gain control of the theater, which in their definition includes not only the central Arctic basin, but also the Norwegian and Greenland Seas. A vital step in this endeavor will be the seizure and blockade of the chokepoints controlling access to (and egress from) the theater. A further step will be to seize adjacent littoral areas in order to ensure command of the theater's airspace. A Soviet campaign in the Arctic theater will therefore involve not only the Soviet Navy, but some of its sister services as well, in a series of coordinated moves at sea and on land.

For most of these measures to succeed, the Soviets will probably have to carry them out largely unopposed of the outset of war, relying heavily on surprise. It would be a cardinal error, however, to suppose that modern means of surveillance and detection have made the surprise attack obsolete, or great deceptions no longer feasible. For surprise is primarily a behavioral problem, not a technical one: the reasons for surprise are rooted more in the psychology of the victim than in his means of providing warning of attack.

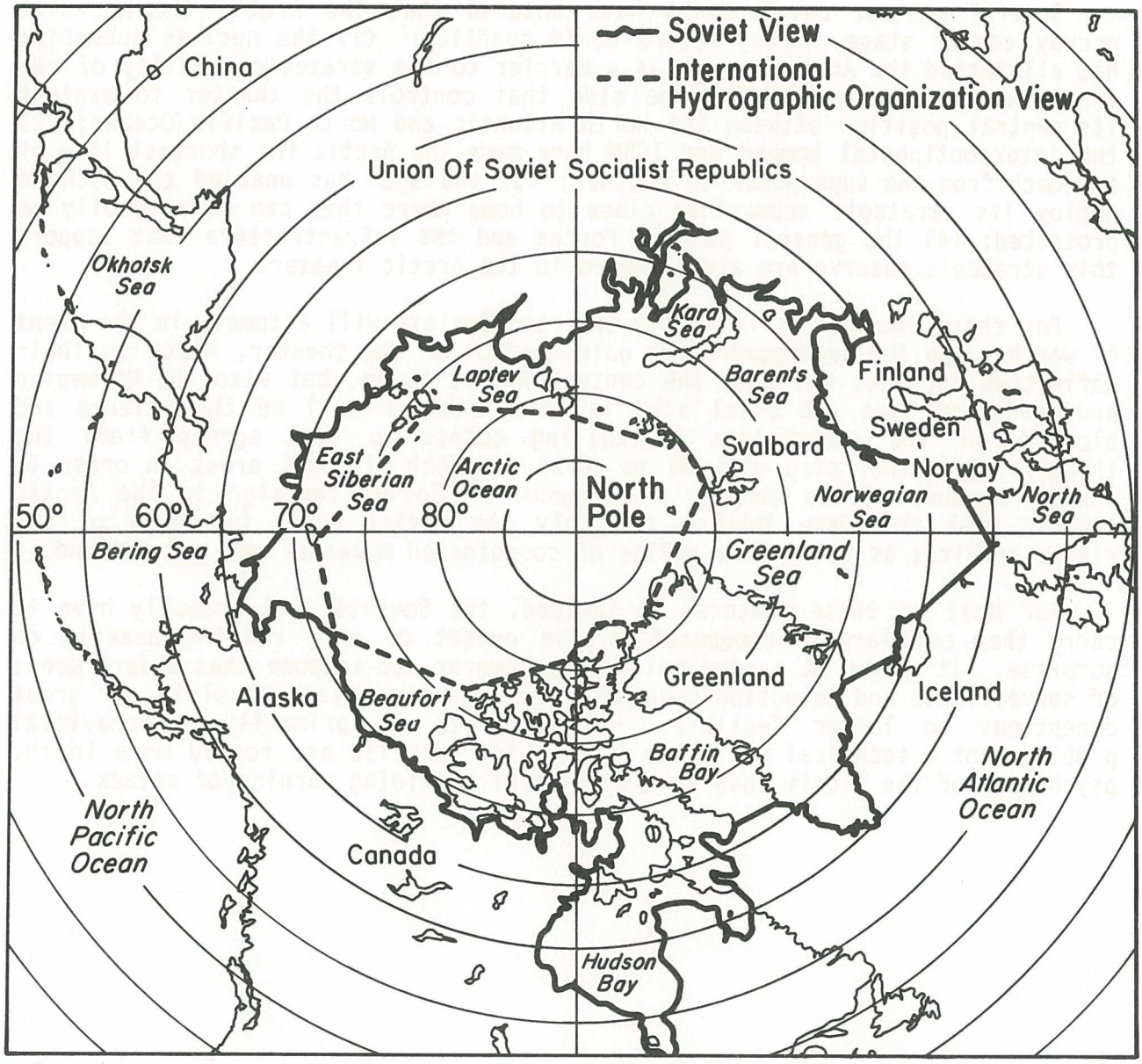

Figure 2 The Arctic theater of military action as defined by the Soviet Ministry of Defense. Note the definition includes all marginal seas and Hudson Bay (Petersen).

THE GEOSTRATEGIC CONDITIONS OF DETERRENCE IN THE BARENTS SEA

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Of the four Soviet naval fleets, the Northern Fleet based on the Kola Peninsula ranks second to none with regard to strategic retaliatory capability. This fleet makes use of 66% of the Republic's total number of SSBMs (42/63), 67% of her SLBMs (624/928), 76% of her warheads (2208/2896) and 73% of the megatonnage disposed to each fleet (818/1114). Great emphasis on anti-submarine warfare (ASW) is another characteristic feature of this fleet. About 70% of the USSR's ASW Kresta-II cruisers and 75% of the ASW attack submarines, the Alfa, Tango and Victor class, are all based on the Kola Peninsula. This is also valid for the ASW-aircraft carrier KIEV and the combatants of Kirov, Udaloy and Krivak classes. Of the Alfa submarines--the fastest and deepest diving of any attack submarine ever built--100% are based in the North.

By the mere fact of geography, the Barents Sea is bound to serve strategic as well as defensive purposes of the uppermost importance to the Soviet Union. It is commonly believed in the West that the Northern Fleet has four distinct and partly integrated military objectives related specifically to the Barents Sea:

(1) The Delta and Typhoon class submarines are supposed to take station in these waters for strategic purposes,

(2) to protect the transit routes within the Barents Sea, so that the SSBN forces have safe access to any extended Arctic station,

(3) to defend the station area from ASW attacks, and

(4) to protect and defend the highly concentrated bases on the Kola Peninsula.

Objective 1 is primarily an offensive one, aiming at deterring any attacks on Soviet sites of interest, while objectives 2, 3 and 4 are defensive in their aiming at preserving the survivability of the SSBNs to the fulfillment of objective 1. In this way the four objectives are both compatible and interdependent. If, however, we take a closer look at the military requirements under which each objective has to be taken care of in times of war, certain incompatibilities appear, making Western assumptions more questionable.

Military forces assigned the task of defending and protecting vital elements of war-fighting, such as the Kola bases, will not approve of any restrictions in their performance of the assignment. Restrictions increase the likelihood of failure. ASW forces will play a dominant role in the defense of the Kola bases and the protection of the transit routes within the Barents Sea. These forces, however, usually have to impose operational

restrictions in or near a station area. They will normally not be given permission to attack submarine contacts in a station area designated for their own SSBNs, to avoid mistakes and hence attacks on one's own submarines. Thus, if the defensive and offensive tasks of the Northern Fleet are to be executed in the same waters, there is an inherent contradiction between the military requirements of these objectives: the execution of the defensive tasks will be to the detriment of the offensive one, and vice versa.

The purpose of this paper is to discuss these contradictions and how the Soviets may cope with them. The natural features of the Barents Sea (i.e., winter ice conditions, icebergs, restrictive depths) are fully explored with a view toward their influence on the strategic challenges facing the Northern Fleet.

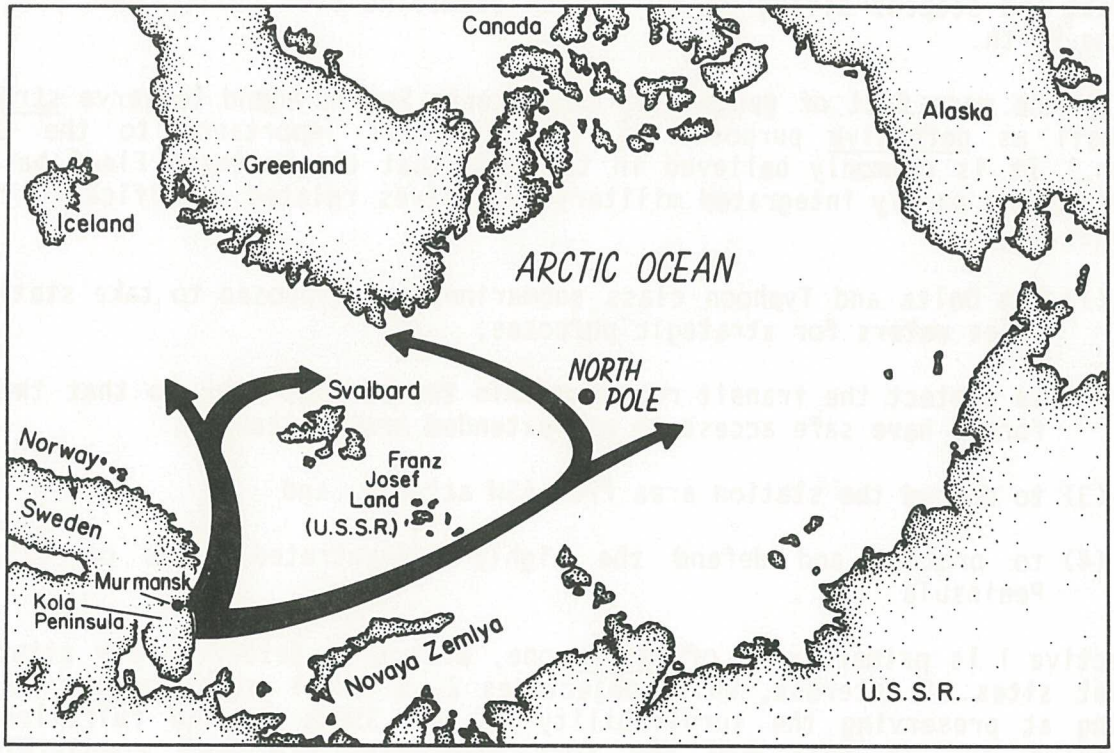

Figure 3 Potential transit routes by Soviet naval units out of the Barents Sea (Østreng).

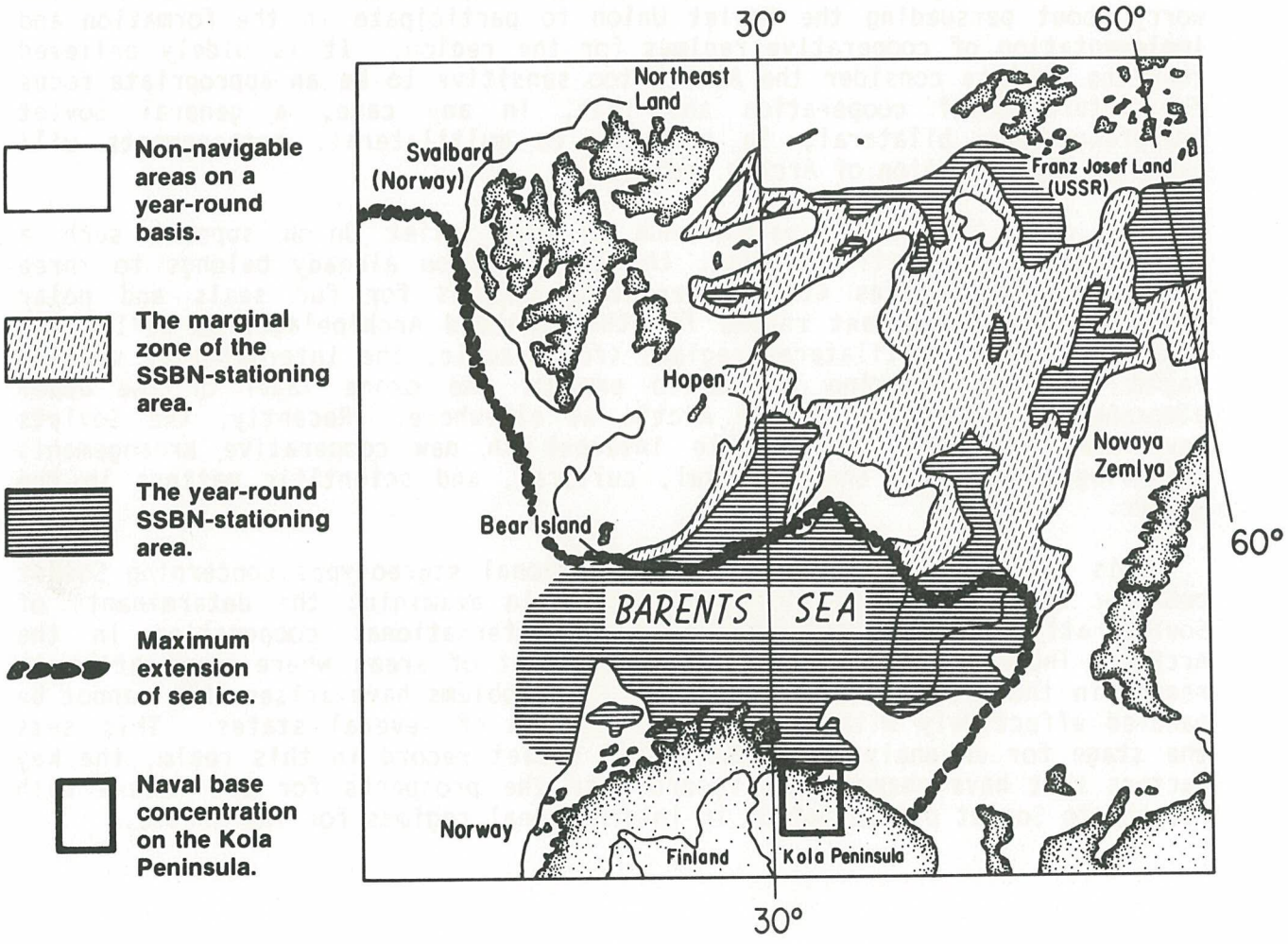

Figure 4 Potential stationing areas for Soviet submarines in the Barents Sea (Østreng).

INTERNATIONAL COOPERATION IN THE ARCTIC: SOVIET ATTITUDES AND ACTIONS

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Those desiring to enhance international cooperation in the Arctic often worry about persuading the Soviet Union to participate in the formation and implementation of cooperative regimes for the region. It is widely believed that the Soviets consider the Arctic too sensitive to be an appropriate focus for international cooperation and that, in any case, a general Soviet preference for bilateral, in contrast to multilateral, arrangements will obstruct the formation of Arctic regimes.

But does the actual performance of the Soviet Union support such a pessimistic assessment? In fact, the Soviet Union already belongs to three Arctic-specific regimes (the conservation regimes for fur seals and polar bears and the management regime for the Svalbard Archipelago) as well as an array of broader multilateral regimes (for example, the international whaling regime and the emerging regime to protect the ozone layer of the upper atmosphere), applicable to the Arctic as elsewhere. Recently, the Soviets have also exhibited considerable interest in new cooperative arrangements involving commercial, environmental, cultural, and scientific matters in the Arctic.

This essay seeks to set aside conventional stereotypes concerning Soviet behavior and to probe beneath the surface in examining the determinants of Soviet attitudes and actions regarding international cooperation in the Arctic. The essay begins with a brief account of areas where cooperation is needed in the Arctic because transboundary problems have arisen that cannot be handled effectively without the participation of several states. This sets the stage for an analysis of the actual Soviet record in this realm, the key factors that have shaped this record, and the prospects for the future with respect to Soviet participation in international regimes for the Arctic.

Table 1

Potential Areas for International Cooperation in the Arctic
(Young and Osherenko)

1. SECURITY

- tension reduction measures
- arms stabilization measures
- demilitarized zones
- nuclear free zones
- ecological sanctuaries

2. INDUSTRY AND COMMERCE

- joint development projects (markets, capital, technology)
- transportation (shipping, air traffic, pipelines, powerlines)
- resource extraction in disputed areas (e.g., Svalbard offshore, Navarin Basin)
- tourism
- search and rescue

3. ENVIRONMENTAL AND CONSERVATION

- oil, chemical, toxic spills and discharges (e.g., prevention, early warning, and rapid response)
- long range transport of air pollutants (LRTAP) (e.g., Arctic haze, toxics, pesticides, CO_2 warming)
- ecosystem protection (e.g., biosphere reserves, habitat protection, migratory species)

4. CULTURE AND SCIENCE

- cooperative scientific and technical research addressing areas of concern listed above (natural and social sciences and engineering)
- exchange programs to address common problems in Arctic (e.g., health, education, community development)
- initiatives to protect indigenous cultures and languages
- travel and exchanges for northern (especially native) peoples

Table 2

USSR Participation in Selected Arctic-Specific Arrangements
(Young and Osherenko)

I. SECURITY AND ARMS CONTROL ARRANGEMENTS

Multilateral

*Treaty of Spitzbergen (1920)
Partial Nuclear Test Ban Treaty (1963)
Nuclear Non-Proliferation Treaty (1968)
SALT I and SALT II Agreements (1972, 1979)
Convention of the Territorial Sea and Contiguous Zone (1958)
Convention on the Continental Shelf (1958)
Convention on the High Seas (1958)
Convention on the Law of the Sea (1982)
Seabed Treaty (1971)
Convention on Outer Space (1976)
Japan/US/USSR Air Traffic Control Agreement (1985)

Bilateral

USSR/Finland Military Protocol (1955)
USSR/Norway Military Protocol (1974)
USSR/US Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War (1971)
USSR/US Incidents at Sea Agreement - INCSEA (1972)
USSR/US Agreement on the Prevention of Nuclear War (1973)
USSR/US Agreement on Crisis Control Centers (1987)

Private

Soviet Academy of Sciences/NRDC Agreement on Nuclear Test Monitoring (1986)

II. INDUSTRY AND COMMERCE ARRANGEMENTS

Multilateral

*Treaty of Spitzbergen
International Civil Aeronautics Organization - ICAE (1944)
International Maritime Organization - IMO (1948)
International Maritime Satellite Agreement - INMARSAT (1976)
Law of the Sea (see Security Arrangements in Section I)
Convention on the International Regulations for Preventing Collisions at Sea (1972)
International Convention for the Safety of Life at Sea (as amended by 1978 Protocol) (1974)
SARSAT/COSPAS Memorandum (1979 and new agreement under negotiation)
Convention on facilitation of international maritime traffic (1965)
*Regulation of the Fishing of North-East Arctic Cod (1974 but USSR withdrew August 15, 1974)

Bilateral[1]

USSR/Norway Land Transportation (1974)
USSR/Norway Water Transportation (1974)
USSR/Norway Technical Cooperation (1972)
*USSR/Norway Sea Boundary Demarcation Agreements (1957 and 1973)
*USSR/Norway Search and Rescue Cooperation in the Barents Sea (1956)
USSR/Finland Boundary Maintenance (1979)
USSR/Finland Industry (1977)
USSR/Finland Energy (1974)
USSR/Finland IGO Establishment (1967)
USSR/Finland Rescue Operations in Finnish and Soviet Territorial Waters (1971)
*USSR/Finland Arctic Technology Committee (1981)
USSR/UK Cooperation on Oil and Gas Research and Technology (1987)
USSR/US Deep Sea Drilling (1974)
USSR/US Agreement on Cooperation in Housing and Other Construction (1974)
USSR/US Long-term Agreement to Facilitate Economic, Industrial, and Technical Cooperation (1974)

Fisheries

USSR/Japan Fisheries (numerous agreements)
*USSR/Iceland Science and Technology in Fisheries and Living Resources of the Sea (1977)
*USSR/Norway Fisheries (1975)
*USSR/Norway Regulation and Conservation of Seals in the Northeast Atlantic (1957)
USSR/Finland Fishing and Sealing in Territorial Waters (1922)
USSR/Finland Fishing and Sealing (1959)
USSR/Finland Fishing and Seal Hunting (1965)
USSR/Finland Fisheries and Sealery (1969)
USSR/Finland Fisheries (1976)
USSR/Canada Agreement on Fisheries Relations (1976)
*USSR/Denmark Faeroe Islands Agreement
*USSR/US Convention regarding navigation, fishing, and trading on the Pacific Ocean and along the northwest coast of America (1824)
USSR/US Agreement relating to the consideration of claims resulting from damage to fishing vessels or gear and measures to prevent fishing conflicts (1973)
USSR/US General International Fisheries Agreement (1976 extended and amended 1982 and 1985)

Private

*USSR/Wartsila Marine Industries, Inc. Contract for Delivery of 11 Arctic Class Tankers and 1 Barge Carrier (1987)

III. ENVIRONMENT AND CONSERVATION ARRANGEMENTS

Multilateral

*Treaty of Spitzbergen (1920)
*Agreement on the Conservation of Polar Bears (1973)
*Convention on the Conservation of North Pacific Fur Seals (1957 extended and amended 1963, 1969, 1976, 1980, but 1984 Protocol not ratified by US)
International Atomic Energy Agency Agreement - IAEA (1956)
Convention on Early Notification of a Nulcear Accident (1986)
Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986)
Developmental Studies of the Effects of Radioactivity in the Sea (1969 and 1975)
Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques (1977)
Convention on International Trade in Endangered Species of Wild Fauna and Flora - CITES (1973)
Law of the Sea (see Security Arrangements in Section I)
Convention on Long-Range Transboundary Air Pollution (1979)
International Whaling Convention (1946)
Protocol Relating to the International Convention for the Prevention of Pollution from Ships - MARPOL (1978)
International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (1969)
Protocol Relating to Intervention on the High Seas in Cases of Pollution by Substances Other Than Oil (1973)
Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972)
International Convention on Civil Liability for Oil Pollution Damage (1969 plus Protocols of 1976 and 1984)
Convention on the Protection of the Marine Environment of the Baltic Sea (1974)
Convention on Fishing and Conservation of Living Resources in the Baltic Sea and the Belts (1973)
Convention on Wetlands of International Importance - Ramsar (1971 with Protocol of 1982)
Convention on the Protection of the Ozone Layer (1985 with Protocol expected in 1987)
Antarctic Treaty (1959)
Convention for the Conservation of Antarctic Seals (1972)
Convention on the Conservation of Antarctic Marine Living Resources (1980)

Bilateral

USSR/US Convention Concerning the Conservation of Migratory Birds and Their Environment (1976)
USSR/US Agreement on Cooperation in Environmental Protection (1972 and extended)
USSR/US Agreement on Cooperation in Studies of the World Ocean (1973)
USSR/US Bering Sea Surface Ice and Air Tracking (197)
USSR/US Bering Sea Oil Spill Contingency Agreement (198)

IV. CULTURE AND SCIENCE ARRANGEMENTS

Multilateral

Convention for the International Council for the Exploration of the Sea - ICES (1964)
*Northern Science Network, UNESCO Man in the Biosphere Project (1982)

Bilateral

*USSR/Canada Protocol of Consultations on the Development of a Programme of Scientific and Technical Cooperation in the Arctic and the North (1984 and 1987)
*USSR/US Soviet Academy of Sciences (Institute of Ethnography)/Smithsonian Institute joint exhibit "Crossroads of Continents: Traditional Cultures and Peoples of the North Pacific Rim"
USSR/US General Agreement on Contacts, Exchanges, and Cooperation in Scientific, Technical, Educational, Cultural and Other Fields (1985)
USSR/US Program of Cooperation and Exchanges for 1986-1988 (1985)
USSR/Finland Agreement on Culture (1978)
USSR/Finland Agreement on Education (1979)
USSR/Iceland Cultural and Scientific Cooperation (1961)
USSR/US Agreement on Cooperation in Medical Science and Public Health (1972 and extended)

Private

*International Permafrost Association (1983)
*Polar Geophysical Institute of the Soviet Academy of Sciences/Geophysical Institute, University of Alaska Collaborative Research (1984)
*Siberian Branch of the Soviet Academy of Sciences/Nordic Council for Arctic Medical Research Agreement to Produce Arctic Medical Research
*International Union of Circumpolar Health - IUCH (1986)

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* = Arctic-specific arrangements

[1]The listing of bilateral conventions is not exhaustive. It simply indicates the range of concerns covered by cooperative arrangements. We have not verified which of these arrangements remain in force or have been superceded by more current agreements.

A COMPARISON OF SOVIET ARCTIC AND ANTARCTIC POLICIES

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The Soviet Union is a polar State with multiple polar interests. These interests apply not only to the Arctic, but also to the Antarctic. This paper examines three issues which lend insight into the Soviet Government's perception of its national interest priorities for the respective poles, the policies formulated to attain those priorities, and the geostrategic importance which has been affixed to them.

First, there is the Soviet Union's legal attitude towards territorial claims and sovereignty considerations. In the Arctic, the Soviets have laid claim to the region using a sector device for delimitation, based on proximity and contiguity. In the Antarctic, the Soviet Union denies the validity of seven other States' claims there using those same legal rationales. It also reserves the legal right to make a future claim to the continent based on historical discovery by "Russian sailors and navigators," and continued, albeit not "effective," occupation by Soviet citizens (i.e., scientists) since 1958.

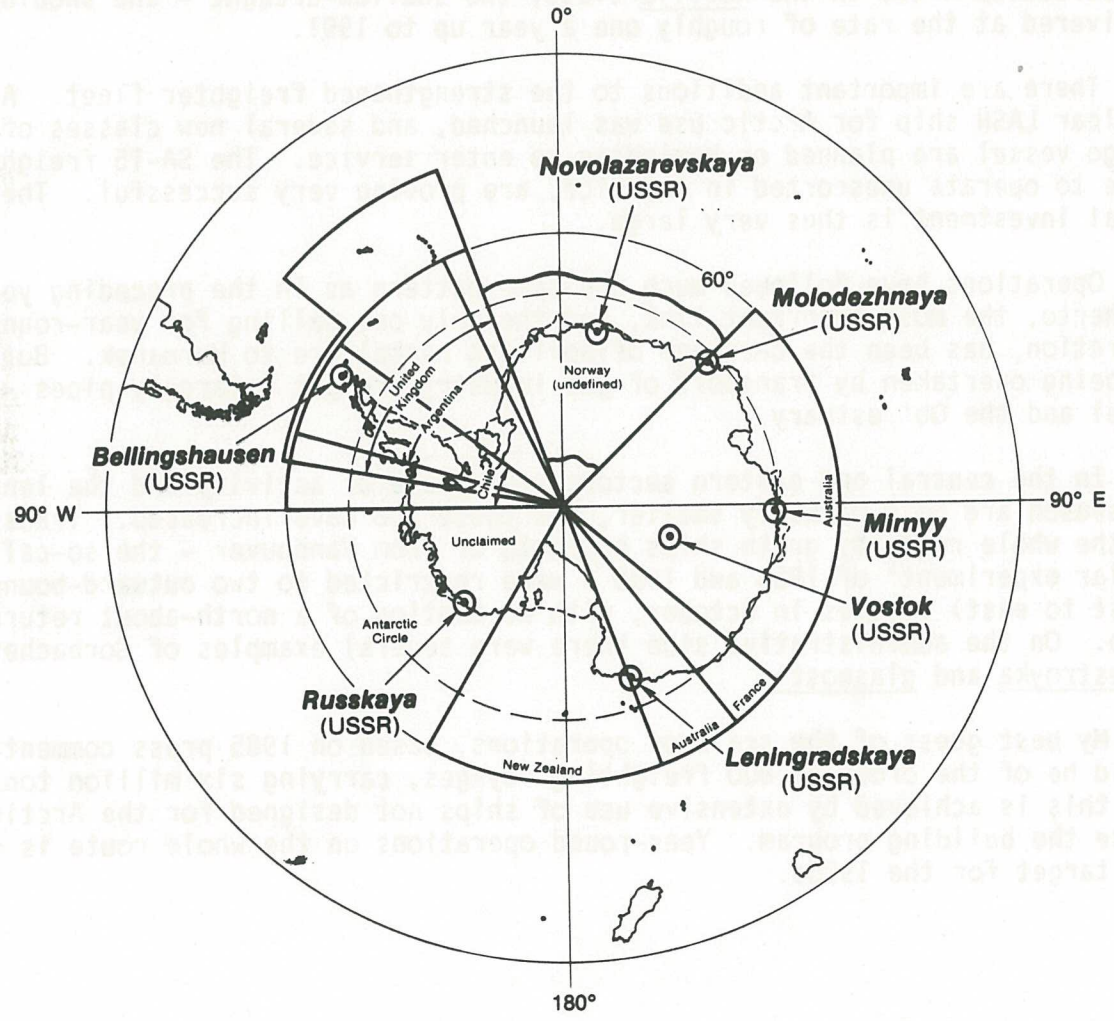
Second, there is the promotion of scientific activities in each pole. In the Arctic, scientific activities are actively conducted, with a particular view towards enhancing the Soviet Union's national security in the region. The Soviet Union's decision during the Third United Nations Conference on the Law of the Sea to move from supporting a relatively free access regime to that of a more restrictive consent regime for scientific research in the Exclusive Economic Zone was, in part, motivated by security considerations. In the Antarctic, Soviet policy towards oppotunities for scientific research adamantly favors absolute freedom and complete access, both on land and in circumpolar waters. This position is legally supported by Article II in the Antarctic Treaty, the international regulatory system in place since 1961 for managing Antarctic activities. The Soviet Union has played an active and important role in Treaty affairs, and has used scientific research opportunities as a legitimate conduit for securing a notable and continual national presence throughout the continent.

Third, distinctions are evident in Soviet policies for managing and exploiting resources in each polar region. In the Arctic, the economics of natural resource development have become especially important in recent years, a fact highlighted by the superabundant deposits of hard minerals and hydrocarbons known to exist in the region. To facilitate domestic industrialization and development, the Northern Sea Route has become increasingly important as a transportation link between the northwest Soviet Union and port facilities in the Pacific. Consequently, the Soviet Government in recent years has moved to tighten oversight of its national rights through this Northeast Passage, and has imposed rather restrictive controls on foreign shipping transiting this route. Contrariwise, in the Antarctic, the Soviet Union insists that all circumpolar waters are high seas, with access to shipping and fishery opportunities there governed by a high seas regimes;

i.e., this ocean space must be kept open to all, so that it may be used freely by all. Regarding minerals on the continent, the Soviet Union supports creation of a special Minerals Regime under the Antarctic Treaty System to regulate future development of Antarctic resources. Such a regime would likely enhance the Soviet role in Antarctic affairs, as well as preserve opportunities for Soviet access to and allocation of exploitation rights in the future.

Figure 5

National Claims and Soviet Stations in Antarctica



NORTHERN SEA ROUTE OPERATIONS IN THE 1986-87 SEASON

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It is not easy to find out what happened on the Northern Sea Route in any given season. No annual report is published, and very little in the way of papers in professional journals. My own impression (which is all it is) is therefore derived from press and radio reports.

The fleet of Arctic-worthy ships is being continually augmented. In 1986 18 polar icebreakers (i.e., over 10,000 shp) and four smaller ones were mentioned as operational in the Arctic. They included the four nuclear-powered vessels. At the same time four new nuclears are under construction - two in the Rossiya class, two shallow-draught - and should be delivered at the rate of roughly one a year up to 1991.

There are important additions to the strengthened freighter fleet. A nuclear LASH ship for Arctic use was launched, and several new classes of dry cargo vessel are planned or beginning to enter service. The SA-15 freighters, able to operate unescorted in 1 m. ice, are proving very successful. The total investment is thus very large.

Operations have followed much the same pattern as in the preceding years. Hitherto, the most important link, and the only one calling for year-round operation, has been the carriage of Noril'sk nickel ore to Murmansk. But it is being overtaken by transport of gas industry freight - largely pipes - to Yamal and the Ob' estuary.

In the central and eastern sectors, the scale of activity and the length of season are both markedly smaller, but these too have increased. Transits of the whole route by grain ships bound to or from Vancouver - the so-called 'polar experiment' of 1984 and 1985 - were restricted to two outward-bound (west to east) voyages in October, with no mention of a north-about return trip. On the administrative side there were several examples of Gorbachev's perestroyka and glasnost'.

My best guess of the scale of operations, based on 1985 press comment, would be of the order of 600 freighting voyages, carrying six million tons. But this is achieved by extensive use of ships not designed for the Arctic; hence the building program. Year-round operations on the whole route is still the target for the 1990s.

USE OF THE SIBERIAN RIVERS AS A TRANSPORTATION SYSTEM

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Rivers account for a very small share of freight traffic in Siberia and the Soviet Far East. Overall traffic figures for the region, however, are dominated by three components: long-distance rail and short-distance road traffic in an east-west belt in the south, and pipeline traffic out of Western Siberia. Outside the southern belt, and excluding oil and gas movements out of Western Siberia, river transport is the principal carrier.

The specific role of river transport varies from basin to basin, with respect to quality of traffic, range of commodities carried, and the importance of rivers vis-a-vis other transport modes. Rivers, supplemented by winter roads, are usually dominant in pioneering areas. But as traffic has grown, and year-round functioning has become important, they have tended to lose traffic to railways and, in some areas, to road or sea transport.

A question of current and probably continuing interest is the relative roles of river and sea transport in supplying the Soviet Arctic. Where the two modes are in direct competition, river transport is usually claimed to be much more economical. The next few years are likely to see an expansion of the potential overlap between river and sea transport, in terms of the regions and types of traffic they are able to serve. Factors likely to affect the situation include the dredging of Arctic river mouths, especially the Lena River; improvements in icebreaking; the introduction of barge-carrying ships; expansion of the use of river-sea vessels; and, eventually, completion of a railway to Yakutsk, which will facilitate much easier rail-river transhipment than at the present up-river port of Osetrovo. Since the technical characteristics of sea and river transport are complementary, cooperation will be preferable to competition, but easy cooperation between transport ministries has not been characteristic of Soviet practice in the past.

Table 3

Soviet Eastern Rivers: Navigation[1] (North)

	Ob'-Irtysh	Yenisey	Lena/Northeast	Amur
Navigable, all basin, km. incl. with guaranteed depths	28,500 15,000	16,500 10,800	26,200 10,100[2]	8,700 5,200
Depths guaranteed, metres	2.5-3.0 (main channels) 1.4-2.0 (major side channels) 1.0-2.0 (other rivers)	1.0 (upper reaches) 7.0 (below Igarka)	1.0-3.0 (overall range) 2.0-2.2 (Osetrovo to mouth of Vitim) 2.6-2.9 (Vitim-Lena delta)	0.85-1.5 (side channels)
Navigable, specific rivers, km	3650 (Ob') 3784 (Irtysh)	3487 (Yenisey) 1779 (Angara)	4125 (Lena) 1665 (Kolyma) 872 (Yana)	2824 (Amur)
Navigation season, days	100-140 (Gulf) Angara) 190-200 (centre and south)	av. 181 (mouth of av. 127 (Igarka) av. 173 (Bayka)	av. 129 (Osetrovo) Khabarovsk) av. 91 (Lena delta) av. 76 (Nizhneyansk) 125-93 (middle and lower Kolyma)	av. 186 (Komsomol'sk- av. 178 (below Blagoveshchensk)

[1]Source: V.I. Tonyayev, Geografiya vnutrennikh vodnykh putey SSR (Moscow, 1977)

[2]Includes navigable sections of rivers controlled by the RSFSR Ministry of River Fleet (21,300 km). Some northeastern rivers are controlled by the USSR Ministry of the Merchant Marines.

Table 4

Soviet Eastern Rivers: Traffic[1] (North)
(million tons)

	1985	1986	1987 plan	1990 plan
Total Loaded	100.5	159.4	161.5	176.2
Percent of RSFSR	21.1	29.2	29.3	
Deliveries to Far North[2]	40.0			
Ob'-Irtysh basin:				
Total loaded[3]		70.0+		
To oil and gas regions	11.5	19.8		
Including to Ob'-Taz Gulf	3.6			
Of which, to Yamburg	1.4	2.2	2.2	4.8
Yenisey basin:				
Total loaded[3]		30.0+		
To Far North	6.0			
Including to Dudinka	3.6			
Lena basin and Northeast				
Total loaded[3]		10.0+		
To North, from Osetrovo	3.6	4.8		
Including oil products	1.7	2.0	1.7	
general dry goods	2.0		2.3	
Amur basin				
Total loaded[3]		20.0+		

1. Sources: Narodnoye khozyaystvo RSFSR v. 1985 godu: Statisticheskiy yezhegodnik (Moscow, 1986), p. 200; Rechnoy transport, 1987, no. 4, pp. 28, 29; 1987, no. 2, pp. 2, 6; 1986, no. 12, p. 4; 1986, no. 5, p..6; 1986, no. 4, p. 39; 1986, no. 3, p. 17.

2. Per annum average, 1981-1985.

3. Totals loaded for individual basins add to 29.4 million tons less than known 1986 total, so are probably all underestimates, but especially Ob'-Irtysh.

TECHNICAL DEVELOPMENTS AND THE FUTURE OF THE SOVIET ARCTIC MARINE TRANSPORTATION SYSTEM

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The Soviet Union operates the world's largest fleet of polar ships, the majority of which are used along the Northern Sea Route. Technological advancement, adaptation and technology transfer from the West have played leading roles in the development of this diverse fleet. Since the 1950s the Soviet Union has pioneered the use of nulcear power for Arctic ships. Concurrently, the Finnish shipbuilder Wartsila has provided the bulk of the Soviet conventionally-powered icebreaker fleet. Recent developments include the completion in the USSR of a nuclear, Arctic LASH (lighter-aboard-ship) ship; the building in Helsinki of two shallow-draft, nuclear icebreakers of the TAYMYR class; continued improvement of the successful SA-15 icebreaking cargo ships; and, construction of offshore jackup rigs in the West for exploration in the Barents Sea. The Soviet Arctic fleet of the 1990s will contain a significant component of nuclear-powered ships of extraordinary range and icebreaking capability.

While the Soviet icebreaker fleet's primary role is to support marine transportation, the multi-mission nature of these assets should not be underestimated. These ships have conducted search and rescue, performed logistics to a host of installations, supported scientific operations and served as platforms for engineering research. The fleet provides the Soviet Union with an appropriate capability to project a visible presence anywhere in the Arctic Ocean. The fleet will also serve many roles in direct support of future Arctic offshore development and can support military operations should the need arise.

Ice conditions along the Northern Sea Route continue to be the key determinants for establishing the level of capability of the Arctic fleet. The current fleet, particularly the nuclear icebreakers, are capable of maintaining year-round navigation in the Barents and Kara Seas to the port of Dudinka. Because of the exceptional capability of the SA-15 ships and the nuclear LASH ship SEVMORPUT, the Soviet Union may attain year-round navigation in this region with icebreaking ships operating independently (with minimal icebreaker support). However, icebreaker escort of ships in the Laptev and East Siberian Seas will continue due to the extent of fast ice and the duration of the ice season. Satellite images of these seas reveal broad areas of fast ice and the inflow of pack ice into the region. In the Laptev Sea ice breakup occurs off the Lena and Yana River deltas providing no more than a 6 to 7 month navigation season with substantial icebreaker support. Year-round navigation (in any regular fashion) across the entire Soviet Maritime Arctic would appear to be difficult to attain despite the extraordinary effort and investment.

Figure 6

Design Evolution of Soviet Polar Icebreakers

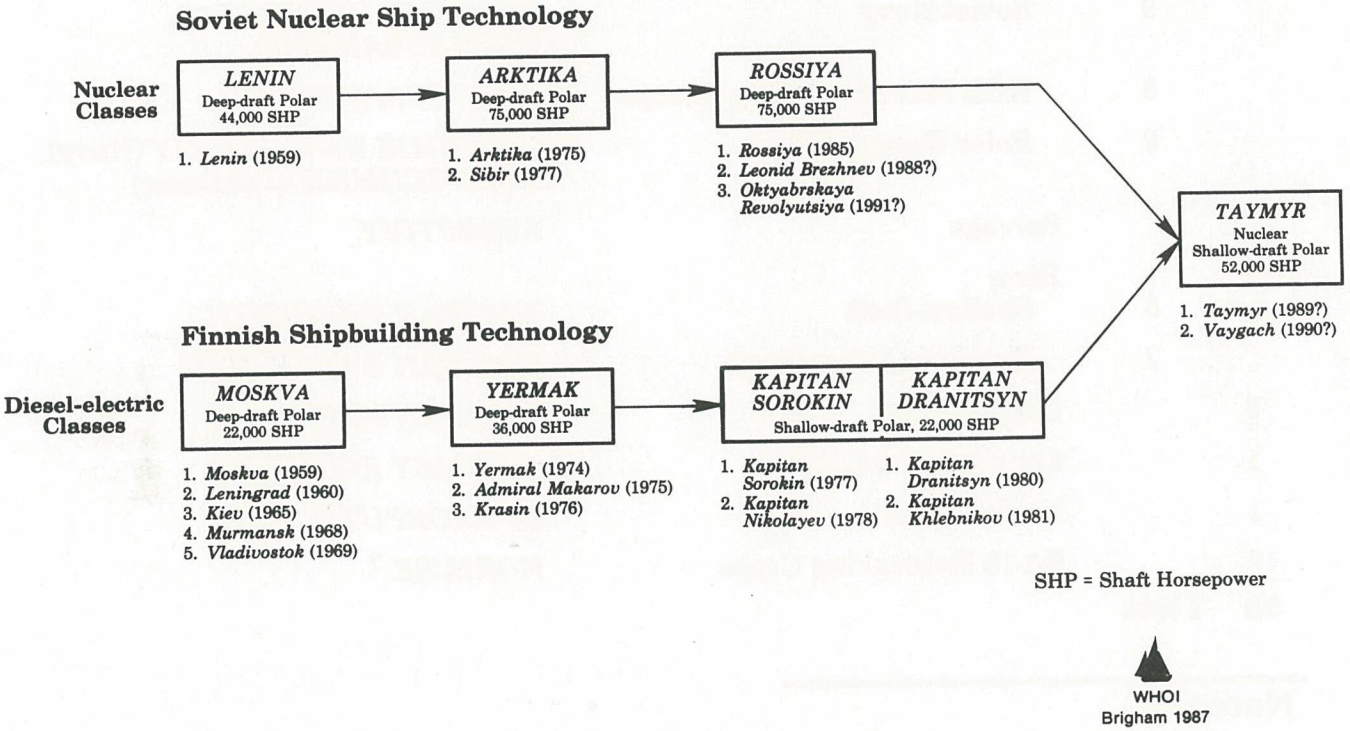

Table 5

Soviet Icebreaker Fleet Profile for 1987

Number		Type	Class or Name
16		Polar [1,2]	*LENIN* (1), *ARKTIKA* (2), *YERMAK* (3), *MOSKVA* (5), *KAPITAN SOROKIN* (4), *ROSSIYA* (1)
36		Subarctic [3]	
	20	Merchant Marine	*DOBRYNY NIKITICH* (14), *KAPITAN BELOUSOV* (3) [4], *MUDYUG* (3)
	9	Soviet Navy	*DOBRYNY NIKITICH* (7), *IVAN SUSANIN* (2)
	5	KGB Maritime Border Troops	*IVAN SUSANIN*
	2	Polar Research	*VLADIMIR KAVRAYSKIY* (Navy), *OTTO SCHMIDT* (Academic)
7		Salvage	*STROPTIVY*
13		River	
	6	Shallow-draft	*KAPITAN CHECHKIN*
	7	Extreme shallow-draft	*KAPITAN EVDOKIMOV*
3		Large Harbor	*KAPITAN IZMAYLOV*
1		Conventional LASH [5]	*ALEKSEY KOSYGIN*
1		Nuclear LASH	*SEVMORPUT* [6]
16		SA-15 Icebreaking Cargo	*NORIL'SK* [7]
93	**Total**		

Notes:

1. Polar icebreaker defined as a ship capable of operations in multi-year ice of the polar pack.
2. Four nuclear-powered polar icebreakers under construction: 2 shallow-draft, *TAYMYR* and *VAYGACH*, by Wartsila in Helsinki; 2 *ROSSIYA* class, *LEONID BREZHNEV* and *OKTYABRSKAYA REVOLYUTSIYA*, in Leningrad.
3. Subarctic icebreaker defined as a ship capable of operations in seasonal, first-year ice.
4. Three ships of the *KAPITAN BELOUSOV* class built 1954-56 are at the end of their service lives.
5. LASH = lighter-aboard-ship.
6. Launched in February 1986 and undergoing completion.
7. Three more SA-15 ships building in Finland to be delivered.
8. Of the 93 polar ships, 36 were constructed in the USSR (4 nuclear polars, 2 LASH, 30 subarctic) and the remaining 57 in Finnish yards. Not included in the table are the more than 100 ice-strengthened and ice-capable freighters and tankers that sail in the Soviet Arctic.

SOVIET ARCTIC SCIENCE AND ENGINEERING

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Contrary to generally held opinions, there is substantial openly published Russian material available about the Soviet Arctic, including maritime aspects. Most of it is available on microfiche in the CRREL Library and catalogued in its published bibliography which is also computer retrievable. We can find a surprising number of articles devoted to scientific problems.

Much of their engineering research efforts are devoted to icebreakers and ice navigation, although most Soviet icebreakers are built by Finland, with the exception of nuclear-powered ships. Not much is available on offshore structures, for which rather intense occupation has developed with the Japanese.

Very substantial efforts are being made in electromagnetic and acoustic sensing of the Arctic Ocean as well as remote sensing including the use of satellites. The basic scientific efforts in these directions have been extensively published for scrutiny by the academic community.

The paper highlights Soviet efforts in the Arctic with substantial references and assessment of their contributions to the various branches of scientific and technical inquiry.

CANADA-USSR ARCTIC SCIENCE EXCHANGES

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In the 1970s the Canadian and Soviet Governments had selected the Arctic as a region which held most promise for bilateral cooperation. However, in spite of several joint discussions, and the signing of two Memoranda (dealing with earth sciences, meteorological and oceanographic studies, marine and terrestrial ecosystems, medical and social sciences), both sides could not agree upon a mutually beneficial exchange program. The Canadian side stressed the need for the inclusion of social sciences, while the Soviet side argued that the program initially should be limited to the physical and natural sciences.

During 1981 a Soviet Aide-Memoire was presented to the Canadian Government noting the importance of Arctic scientific and technical cooperation between both countries, including exchanges in the social sciences. At the same time the Canadian Government was reviewing the possibility of reviving relations with the Soviet Government after Afghanistan. As a result of the Soviet decision to include social sciences, extensive inter-departmental consultation took place in Canada during 1982-83. Canadian and Soviet proposals were exchanged in February 1983 and both delegations met in Ottawa during March 14-16, 1983 at the conclusion of which 25 subject areas which merited further consideration were outlined under four major themes: geoscience and arctic petroleum; northern and arctic environment; northern construction; and ethnology and education.

Further discussions were held April 2-16, 1984 in Moscow at the end of which a Protocol was signed agreeing to a detailed 2-year program of activities in 18 main subject areas within the four previously identified themes, some of which were further sub-divided into sub-topic areas. During the period 1984-1987, 12 Canadian and 12 Soviet delegations were exchanged and over 40 scientists and specialists from each country participated in the projects. Although the first series of exchanges were primarily familiarization visits, there were overall benefits to the Canadian side which included: closer personal ties between specialists and the development of good working relationships; access to information which had not been available previously; firsthand knowledge of the situation in northern areas, particularly the state of the art of Soviet northern technology; possible commercial spin-offs, especially in the area of northern construction; and involvement of specialists from aboriginal groups on both sides. This is not to say that there were not any difficulties with the program, nor that the Canadian side was completely satisfied with reciprocity; however, on balance, and as the first step, this initial exchange was highly successful and certainly contributed to better and broader Canadian-Soviet relations.

At the meeting of the Canadian and Soviet Coordinating Group during February 23 to 26, 1987 both sides agreed that this program was a success and so extended it until 1989. The new Protocol provides a detailed 2-year program of activities in 30 subject areas with a corresponding increase in the

sub-topic areas which includes joint scientific research projects and field trips, joint publications, bilateral symposia and seminars, reciprocal exchange of researchers and specialists and exchange of information.

The importance of this exchange program will not only continue to improve the scientific knowledge base of the Arctic but "contributes in general to better and broader Canadian-Soviet relations... In the wider context of East-West relations, the program can contribute to improve the dialogue and to lessen tensions" (Communiqué, Department of External Affairs, February 26, 1987).

A REVIEW OF INNOVATIVE SOVIET ARCTIC TECHNOLOGY

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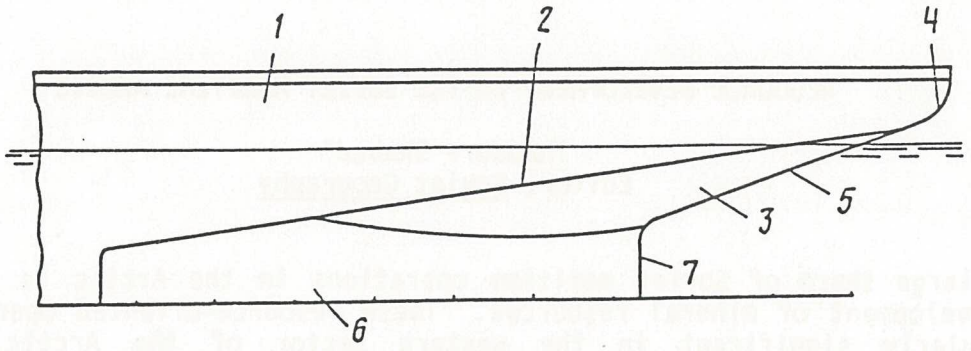
The safe movement of bulk cargoes through Arctic ice requires suitably constructed ships commanded by experienced seamen who have accurate information about the ice conditions beyond their immediate locality. In looking at the overall picture, technology cannot be confined to the development (in design offices and test tanks) of the optimum icebreaking hull form. Innovative technology has to cover the strategy of the planning of ship movements and their timing with regard to the prevailing and forthcoming ice conditions along the routes. At sea, within each convoy, it must extend to the tactics adopted by the icebreaker captain in negotiating the ice, assuring the safe passage of each ship through it to her destination.

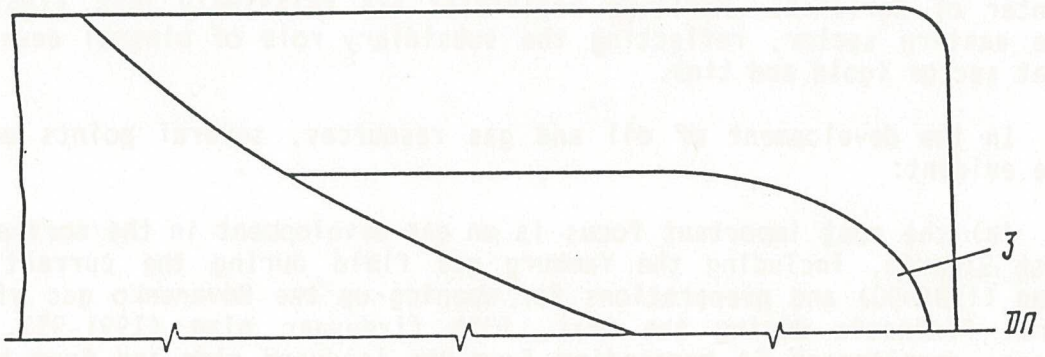
With the recent testing and likely adoption, by Arctic icebreakers, of a highly efficient bow form (modelled on the channel cutting bow attachments pushed by ships on the Volga and the other southern rivers) it is possible that the technology of hull forms for penetrating ice will advance little further. Now, we can expect to see innovation in the tactics of ice navigation in which fuel economy has become an important factor. Ship's fuel expenditure records are now under scrutiny and a captain is expected to run an economical, as well as an efficient, ship. Gorbachev's demands for economy in the year-round operation of the Arctic fleets have been heeded.

Except under very difficult conditions the single line convoy with the icebreaker in the lead has been the traditional formation. Considerations of safety, however, require long inter-ship distances and low speeds of advance, both of which are factors tending to negate the advantages offered by passage in convoy. Every time the icebreaker turns back to cut a ship free she burns extra fuel. It is probable, therefore, that this formation will give way to various echelon formations which are more efficient in terms of the number of ships escorted per icebreaker. Innovations are attempted for the sake of economy. In 1986, on the difficult 300 n.m. passage up the Enisei to Dudinka two enterprising icebreaker captains introduced the short tow at high speed for large displacement ships. Their method was found to give great savings of fuel and passage time. It involves an element of risk, however, even with the best seamanship, and opinions are divided.

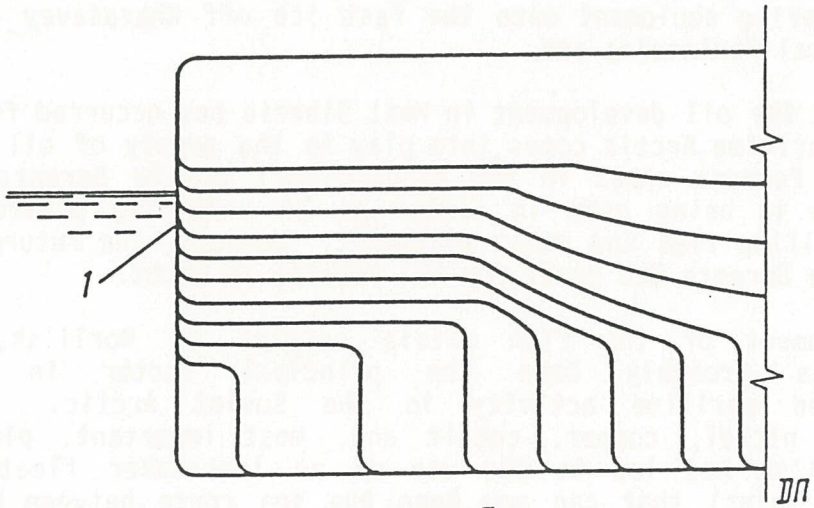
The construction of port terminals on the permafrost poses problems, some of which have been overcome by technical innovation, even to the point of using ice as a constructional material for jetties.



Фиг.1



Фиг.2



Фиг.3

Figure 7 Diagrams of an Icebreaker Bow in a Recent Soviet Patent Specification (Watson).

RESOURCE DEVELOPMENT IN THE SOVIET MARITIME ARCTIC

Theodore Shabad*
Editor, Soviet Geography

A large share of Soviet maritime operations in the Arctic is related to the development of mineral resources. These resource-oriented operations are particularly significant in the western sector of the Arctic, west of Vil'kitskiy Strait, and encompass the coastal areas of the Barents Sea and especially the Kara Sea. These western-sector activities focus in particular on the development of oil and natural gas as well as on the important metals center of Noril'sk. Maritime activities are relatively less significant in the eastern sector, reflecting the subsidiary role of mineral development in that sector (gold and tin).

In the development of oil and gas resources, several points of emphasis are evident:

(a) the most important focus is on gas development in the northern part of West Siberia, including the Yamburg gas field during the current five-year plan (1986-90) and preparations for opening up the Bovanenko gas yield on the Yamal Peninsula during the next, 13th five-year plan (1991-95). In both cases, development is proceeding from the landward side and from the seaward side. Supply operations from the seaward side involve the delivery of large-diameter gas pipe to the Novyy Port anchorage in Ob' Gulf for transfer to barges that then take the pipe upriver closer to pipeline construction routes. The seaward approach is also being used to develop the Bovanenko field, by delivering equipment onto the fast ice off Kharasavey on the west coast of the Yamal Peninsula; and

(b) most of the oil development in West Siberia has occurred from the land side, but the maritime Arctic comes into play in the supply of oil exploration parties on the Pechora coast in the eastern part of the Barents Sea. Here again, fast ice is being used in winter as an unloading platform for the delivery of drilling rigs and other equipment. However, the future production potential of the Barents Sea coast for oil remains in doubt.

The development of the rich metals complex of Noril'sk, which is continuing, has probably been the principal factor in stimulating resource-oriented maritime activity in the Soviet Arctic. An unusual combination of nickel, copper, cobalt and, most important, platnium-group metals at Noril'sk has led to the use of an icebreaker fleet (including nuclear-powered ships) that can now keep the sea route between Noril'sk and the western ports of Murmansk, Arkhangel'sk and Kandalaksha open virtually year-round (except for the two-week ice break-up on the lower Yenisey River).

Resource sites in the eastern sector are being supplied on a seasonal basis from Pacific ports, and include mainly the gold and tin mines on or near the Chukchi coast. Arctic operations also play a role in the development of the new tin lode center of Deputatskiy in the Yana River country. An experiment of dredging tin from offshore gravels appears to have been abandoned.

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*Deceased, May 4, 1987.

OIL-GAS RESOURCES OF THE SOVIET OFFSHORE ARCTIC

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The Soviet Arctic offshore area is the largest unexplored potential oil-gas region in the world. It consists of the Barents, Kara, Laptev, and East Siberian Seas.

Geologic conditions in parts of the Barents basin appear to have much in common with the prolific North Sea and West Siberian oil-gas provinces. Deep depressions here are filled by 10-20 kilometer thicknesses of sediments and are separated by structural highs where traps are likely present. Rich oil-generating beds of Devonian, Triassic, and Jurassic age are predicted to be present in various parts of the basin, and what with the great thicknesses of sediments in the depression areas, some of these are very likely to have generated large amounts of oil and gas. The Barents basin, including both Norwegian and Soviet sectors, is assessed as having 14.2 billion barrels of undiscovered recoverable oil and 312 trillion cubic feet (tcf) of undiscovered recoverable gas. If conditions are good, a great amount more may be present.

The Kara Sea embraces two basins: the South Kara, which is a continuation of the West Siberian oil-gas province, and the North Kara, which is geologically a continuation of the Barents basin. Largely gas has been found in the southern, onshore parts of this basin. There is greater chance for oil in the northern part and in the North Kara basin. The South Kara basin is assessed as having 5.7 billion barrels of undiscovered recoverable oil and 16.4 tcf undiscovered recoverable gas.

The only part of the Laptev Sea that is potentially important is the South Laptev basin, where good oil-generating source beds are predicted. This basin is assessed as having 1 billion barrels of undiscovered recoverable oil and 3 tcf of undiscovered recoverable gas. The East Siberian Sea depression will probably be gas-prone because of the coal-bearing character of the source beds. Undiscovered recoverable oil is assessed here at 3.7 billion barrels and undiscovered recoverable gas at 57 tcf.

The total assessment of oil and gas for the Soviet Arctic offshore is estimated at 20 billion barrels and 434 tcf.

Table 6

Undiscovered Recoverable Oil and Gas
of Soviet Arctic Offshore (Clarke)

Basin	Oil billion barrels	Gas trillion cubic feet
Barents Sea	8	200
Kara Sea	6	164
Northeastern Siberia Shelf	6	70
TOTAL	20	434

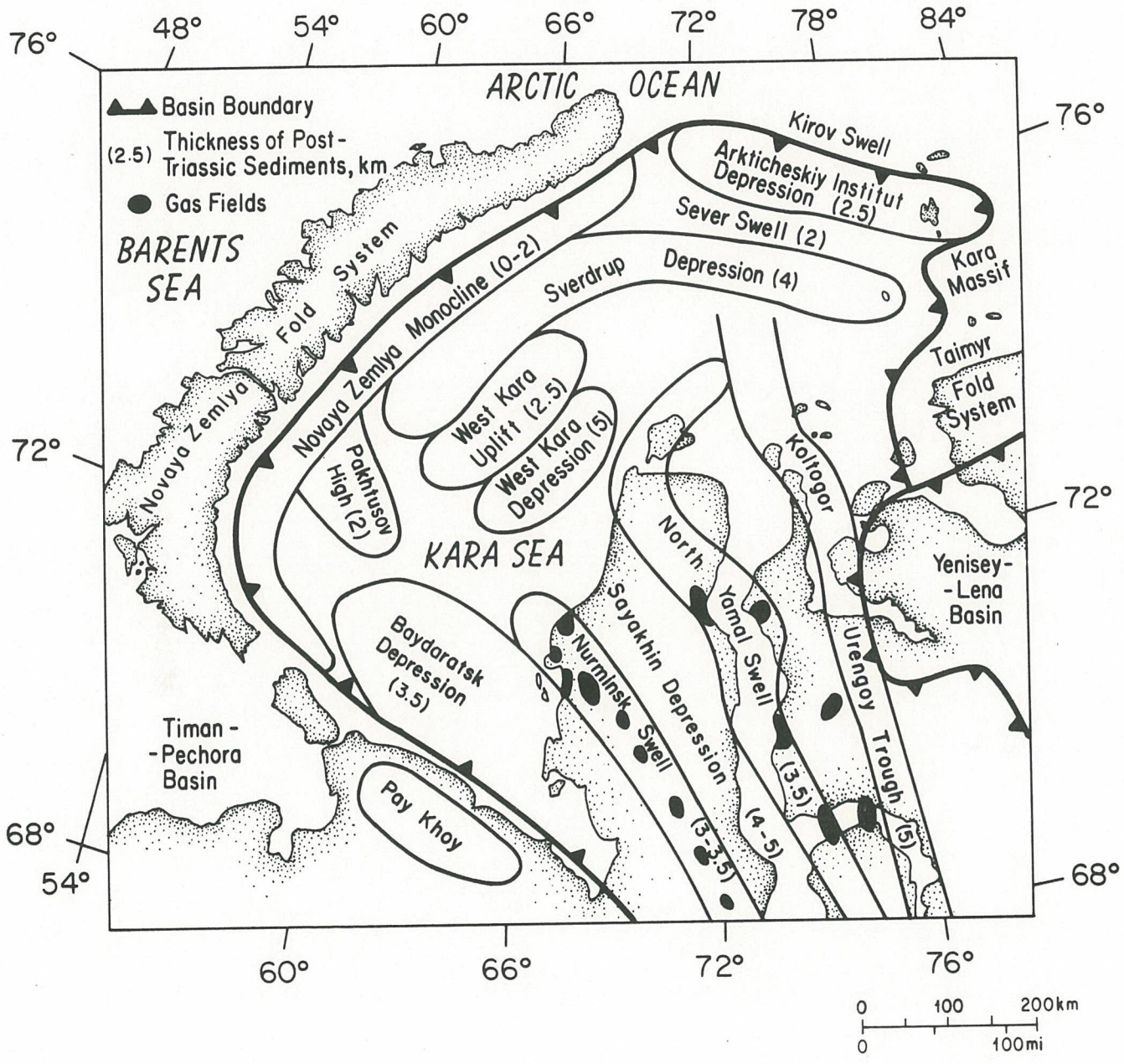

Figure 8 Geological structures of the Kara Sea and onshore West Siberia (Clarke).

SOVIET MARITIME ARCTIC WORKSHOP
May 10-13, 1987

Summary Discussion

A roundtable discussion of the principal topics of the Workshop was conducted on the morning of May 13. Melvin Conant was the chairman of the discussion and he, Terence Armstrong and Lawson Brigham presented summaries and propositions for each of the Workshop sessions. There were two keys to the propositions as outlined by the chairman. Each said something about what had been presented in the formal papers and second, what the future held for a particular topic (e.g., marine transportation, legal issues, strategic issues). The themes of the summary discussion were focused on what the group knew presently about the Soviet maritime Arctic and what the group forecast for this region in the future. What follows is an accurate record of the discussion session. The process began with a summary and propositions regarding historical and introductory perspectives presented by Terence Armstrong.

Introductory Perspectives

TERENCE ARMSTRONG (Scott Polar Research Institute): I would like to say a few words about the contributions of Bill Barr and Franklyn Griffiths. I thought they were remarkably complementary. It was excellent to begin by drawing attention to the 500 year sweep of history that is involved in the Soviet Maritime Arctic. It is not something that started yesterday, it has been going on for quite some time. I also think it was extremely interesting to hear about the Great Northern Expedition and to realize that virtually the whole North of Eurasia was mapped by 1738. At the same time, on this side of the North Pole, there was nothing remotely comparable. So, it was clear already that the Russians had a big start in this game. Various historical points of interest came out but I won't go into detail here. But I do want to signal the fact that what interested me during Bill's talk was the realization that a lot had been going on.

Then Frank presented his very interesting idea that you must, as a nation, have some kind of background in the way you look at the Arctic in order to be able to do things on a big scale today and to do them as well as the Soviet state is doing it and how they have been able to develop their present Arctic expertise. What was it in their national character which was causing them to be inspired this way? He made some very interesting comparisons. He talked about the Arctic sublime, a Victorian idea that the Arctic was a romantic, marvelous place. An idea, I may say, which one could buttress with consideration of the romantic painters of the period who not only showed what an extraordinary place it was but greatly exaggerated the extraordinariness. But the man in the Victorian street, of course, was not aware of that.

WILLIAM BARR (University of Saskatchewan): The buildup in interest in the Arctic began at the end of the czarist period so the Soviets really picked up on something that was already going on.

ORAN YOUNG (Center for Northern Studies): There is considerable continuity in Russian behavior and activities in the North. When we talk about the Soviet Maritime Arctic, we are really talking about some of these continuities and the Russian relationship to the Far North.

MELVIN CONANT (Conant & Associates, Ltd.): I don't know enough about these histories of explorations, for example, what were the primary motivations? In our part of the world it was always an El Dorado of some sort somewhere or, if not, sheer piracy as in the case of some of the British. What were the Russians after? Was there a dream of something?

TERENCE ARMSTRONG: I would say it was very largely fur, and the speed of their advance across the continent from 1580 at the Urals to 1648 on the Pacific was in part due to the speed with which they nearly exterminated the fur-bearers. In order to find more it was necessary to go on, and fast.

MELVIN CONANT: This paid for the Great Expedition?

TERENCE ARMSTRONG: Yes, I think so.

JAMES CLARKE, (U.S. Geological Survey): Wasn't a lot of the push into the Pacific also military? Didn't military detachments follow along to actually claim hold of the land with the idea of keeping the Chinese from coming up into the North? I heard that one of the treaties between the Chinese and the Russians had to be written in Latin because the only common language was between the priests. Military occupation followed the fur traders.

TERENCE ARMSTRONG: I think it derives from the fact that Cossacks were involved.

ANDREW ASSUR, (Cold Regions Research & Engineering Lab): There were defense structures which were similar to what we had here in the West.

JAMES CLARKE: Also the prison system took people out into the Pacific.

MELVIN CONANT: When did colonization of the Arctic area start, apart from prison camps? Did colonization, in the 19th century sense, ever occur?

TERENCE ARMSTRONG: Very much so. There is a weighty tome, 700 pages, entitled Siberia as a Colony, by a Russian historian called Yadrintsev, which details this move to the North. There was no serfdom in Siberia so runaway serfs from the estates in European Russia, if they could get across the Urals, could get a free life in Siberia. Thus, there was a kind of self-propelled colonization as well as one stimulated by the government.

JAMES CLARKE: I've noticed in an atlas showing different ethnic groups that the Russians concentrated right along the Siberian rivers.

TERENCE ARMSTRONG: Yes, that's right. The rivers were the highways.

ROBERT NORTH, (University of British Columbia): In a sense, you can say that the colonization was originally in the North and grew to the South as it became possible to move out of the forests into the grasslands.

WALTER SLIPCHENKO, (Circumpolar Affairs Division): Also, many of the exiles and Russian government officials who were sent to Siberia during czarist times contributed to the scientific investigation of this region. For example, one bibliographical volume published around 1898 lists over 100,000 items either published in Siberia or about Siberia. As a result you have a knowledge base on Siberia, including the northern regions, which has been accumulated over centuries and is unique.

MELVIN CONANT: It is now my turn and I am going to reverse the order with which we discuss the next two topics. We did originally take up legal questions, issues and boundaries and then strategic issues and geopolitical concerns. I want to reverse that order partly because of the strength of the propositions I would like to offer.. I was disappointed when I came to write these propositions because it is of a world I would greatly prefer did not exist but have to conclude it does. So I offer these with something of an apology.

Strategic and Geopolitical Concerns

Proposition One: The fundamental factor in the Soviet Maritime Arctic is the overriding strategic importance of the region to the security of the USSR. No other considerations even approach the importance of this factor; nothing that happens in the region will occur without consideration of this interest.

Proposition Two: There is no plausible set of reasons which will alter the crucial importance of this strategic/geopolitical concern to Soviet policy and practices in its maritime Arctic. The USSR has no alternative to the Kola Peninsula or the Barents Sea's crucial role or to the singular importance of its complex of bases in the Soviet Far East. There is nothing located in between and nothing of comparable importance anywhere else and so the focus of the Soviet Union is on this region. We were told by Charles (Petersen) and Willy (Ostreng) that the Kola/Barent Sea has certain, very major, operational disadvantages to the Soviet Union but it is all they have and, since it is, the attention that must be riveted on events in the maritime Arctic become of even greater concern.

Proposition Three: A very large part, but not all, of the Soviet strategic interest in the maritime Arctic will disappear with the blowing of the ice cover of submarines. Detection then becomes more certain, as it may now be.

These are pretty blunt statements but I felt they grew out of our discussion.

WILLY ØSTRENG (Director, Fridtjof Nansen Institute): They are blunt but reflect reality.

ANDREW ASSUR: You are trying to be realistic in your position that the Soviets have no other choice. A realistic statement explains many attitudes and actions. I am not too sure whether all ice protection has been blown. Technically speaking we are no way near to that condition, on either side.

MELVIN CONANT: I didn't mean to imply that this had happened but that strategic interest will disappear if it does.

ANDREW ASSUR: Then you are correct. If the ice problem is solved then the question is, how unlikely it is, and what timespan and scientific paths do we have to travel. This is still a key question.

CHARLES PETERSEN (Center for Naval Analyses): I don't think the importance of the region is going to go away when the ice cover is blown. That statement applies only if you assume that the only reason the Soviets are interested in the Arctic Ocean is because it is a cover for their SSBMs. That isn't necessarily so. I believe the theater is important because of its relation to the adjacent maritime theaters and control of this theater would give the Soviets a tremendous advantage in reinforcing themselves in either adjacent theater. This is something that isn't well appreciated today.

MELVIN CONANT: That was the point of your presentation earlier.

CHARLES PETERSEN: Yes, I can't emphasize that too strongly.

ORAN YOUNG: I have two reactions to the propositions, which I agree are basically correct. One is that just because the Arctic is a region of great strategic importance for the Soviets does not mean that they will not become interested in cooperative arrangements in the form of appropriate arms control measures. For example, I think that Willy's (Ostreng) comment about the possibility of mutual interest in submarine sanctuaries is relevant here. Strategic importance is not identical to saying that there is no interest in some kind of mutually beneficial agreement.

The other thing I want to say is that although the Arctic is obviously of great strategic importance, this doesn't mean that every bit of the Arctic is of equal importance. It may be that there are certain parts of the region which are demonstrably more important than others and therefore subject to somewhat different agreements.

LINCOLN WASHBURN (Quaternary Research Center): I think there is a basic consideration that we need to keep in mind throughout these discussions: the Arctic environment is not necessarily stable and if some of the climatic projections that are now coming out really materialize, it could significantly change some of the considerations that are now before us. For instance, the extent of sea ice and the thickness of the sea ice cover. Now, this is looking ahead maybe 20-50 years so that it is not something immediate but something that bears consideration.

GUNTER WELLER (Chairman, Polar Research Board): In fact, some of the climatic models predict that there could eventually be a seasonal disappearance of the entire ice cover.

ANDREW ASSUR: Also, scientific studies show that if the sea ice disappears Canada will glaciate. If there is no ice in the Arctic Ocean, then you will have an ice cap across Canada.

GAIL OSHERENKO (Center for Northern Studies): It seems to me, from what I have read, that the fact that submarines are becoming noise proof would make them more difficult to detect.

CHARLES PETERSEN: Well, there is certainly a considerable interest on both sides in acoustic detection in that this might make the oceans more transparent. I agree with your point that it isn't just the Barent Sea that is important but the whole area. I would have to say that the whole area is important to the Russians.

WILLY ØSTRENG: I think Mel's (Conant) propositions are important in that they state the main priorities of the Soviets in this area, priorities that influence and have priority over all other issue areas. This implies that when, for instance, initiatives are taken to establish an all-Arctic scientific cooperation involving all littoral States to the Arctic Ocean, it should be realized, at the outset, that security may become a stumbling block for success. If initiatives of this kind, directly or indirectly, can be interpreted as threatening the security interests of the Soviet Union, the likelihood of establishing such a cooperation is negligible. The history in this respect is rather convincing. Very good, thoughtful scientific initiatives have been taken by Western countries over the years and been blown by the Soviets simply because the Western countries didn't realize they had touched a "hot potato" in the Arctic.

MELVIN CONANT: I am glad you put it just that way Willy. I am now going to offer some propositions on legal issues and boundaries in the light of the propositions on strategic concerns.

Legal Issues and Boundary Problems

Proposition One: In view of the emphasis on Soviet strategic importance of the maritime Arctic, there is no such thing as a discrete, "legal" issue which will be resolved through the application of simple international rules of law.

Proposition Two: "Legalisms" as applied, for example, to Svalbard are of no effect in modifying Soviet positions with regard to the vital importance of the islands and the waters around them. The inference being that if those who want to deal with the problem resort to legalisms they are not talking about the same thing.

The situation, separated from the claims of signatories to a governing treaty, simply put, is bizarre and is no more acceptable to the USSR than would a similar situation confronting the U.S.

Proposition Three: Efforts by other countries, notably the United States, to navigate, to operate in Soviet-called "international waters" or through "international straits" in the Soviet maritime Arctic are only provocative and ought not to be done. No legal interest is served. Concern about Soviet precedence affecting other regions (such as Indonesia) are real enough but Indonesia is not the USSR.

WILLIAM BUTLER (University College London): I would reformulate the propositions. I would say that current Soviet legislation and practice in the Arctic, based on the Law of the Sea Convention, represents (1) a vindication of U.S. and other Western efforts to navigate in the Arctic; and (2) an accommodation of the Soviet view (i.e., that they can live with the balance of

interest crystallized in the Convention -- strategically, economically, legally, and politically -- and can therefore live with an international presence north of their coasts in a way that they were reluctant to do in earlier years). The apparent retraction of their doctrines, which aimed at exclusivity in that region, is further acknowledgement of that proposition. I don't think these are matters of legalisms. International consensus about the rules and principles which reflect the balance of national interests aren't just legalisms, they represent a way to accommodate fluctuations and changes in the interests. The attitude of the Soviet Union in the Arctic, in light of the LOS Convention, whether it comes into force or not, is also based on what happens elsewhere on the globe with regard to regulation of water space. Were that not the case, I don't think they would comply with the Convention.

ROBERT NORTH: You made the point that you felt that these changes were a vindication of American and Allied efforts. Might they not also reflect increasing Soviet confidence as their economic and military strength in the world increases? Perhaps they feel less threatened by other foreign concerns.

WILLIAM BUTLER: Yes, but when you look carefully at the pattern of principal American presences in the 1960s and 1970s, the issue wasn't their being in the Arctic. The issue was what kind of vessel was involved, exactly where it intended to navigate and did it intend to seek permission in accordance with the then prevailing Soviet rules on the subject. The bones of contention were not Arctic per se, but general Law of the Sea issues. That is a profound difference, compared to the 1950s, when the attitude was, "if at all possible keep everything outside".

ANDREW ASSUR: I take issue with proposition three, namely that it is better not to try entering certain waters in order to avoid controversy. The situation is somewhat similar to the Manhattan ice breaker. The U.S. and Canada worked beautifully together in that project. There was full cooperation from the Canadians but the U.S. refused to ask for permission legally. Eventually we will lose the right of free passage through the seas, so attempts have to be made.

WILLY ØSTRENG: Don't your propositions suggest an order? What comes first, national security or legal means? Don't you use legal means to justify the securing of your national interests? If that is what you are suggesting, I completely subscribe to your propositions. The guiding hand here is the national security interests, not legalism. You use legal arguments to secure your national interests.

WILLIAM BUTLER: When we toured the KNORR this morning it was reassuring to see Brittin's book on the International Law of the Sea up on the bridge. That is an operational manual. This is a familiar juxtaposition to all international lawyers. What comes first in any concrete situation may not be easy to determine. There may well be situations when people are guided by what they deem to be in the best security interests of their country, regardless of the applicable rules of the law, either domestic or international. I think most normal day-to-day occasions, that are not crisis situations, are a mixture of everything concerned. The law isn't a cut and dried object. Surely our discussion of the Arctic has demonstrated that. A lot of vessels that have gone to the Arctic have, in effect, made law as they went. You could regard almost every voyage in the Arctic as either charting

new law or reinforcing very tenuous rules simply by their physical presence in certain straits or bays. In the absence of protest and conflict, you normally assume that it is tolerated behavior. When it is not, issues may arise and fester for decades or more. Sometimes they reach resolution in some form of negotiation or a national document, sometimes not. This is the name of the game and in the Arctic you either live with the existing regime or carve out a new chapter.

ORAN YOUNG: It is not clear that there is a sharp separation or dichotomy between law and politics, economics or social issues. There are good reasons to suspect that the Soviets have a definite interest in a more or less well-defined network of rules that would lend some orderliness to the behavior of a variety of parties interested in the Arctic. Also, because of their expanding interests in other parts of the globe, they may find it worthwhile to have a system of general rules, such as the Law of the Sea system, applied to the Arctic.

CHRISTOPHER JOYNER (Senior Fellow, Marine Policy Center): I think it is significant, as Bill (Butler) mentioned, that the Soviets have taken a very universal convention, negotiated over nearly a decade, and applied important concepts and principals from it to their own adjacent waters. Admittedly, these are for their own national interests, but that is what law is supposed to do. It is supposed to preserve stability, to serve everybody's national interests and increase expectations of behavior which provides orderliness and stability. So, it is not surprising the Soviets have done this. I think that it is good, because we know what to expect as long as they publish their laws and we know what those laws are.

WILLIAM BUTLER: To put it another way, when Indonesia established straight baselines in the late 1950s she excluded Soviet vessels. The Russians won't forget it and will bear it in mind when looking at their own policies.

MELVIN CONANT: We now move to the next topic dealing with Arctic marine transport. Lawson (Brigham) has been asked to give us a set of points.

Arctic Marine Transportation

LAWSON BRIGHAM (Guest Investigator, Marine Policy Center): I will use the same technique as Terence (Armstrong), drawing from points made in the three papers on Soviet Arctic marine transportation. It is very obvious from Terence's paper that marine operations along the Northern Sea Route (NSR) are extensive with 600 freighting voyages accomplished in 1985. The NSR is also mentioned in terms of its national importance and thus it has garnered massive investment so that the objective of year-round navigation might be attained in the 1990s. Bob (North) has clearly pointed out that the Siberian rivers are an integral part of the transportation system throughout the Soviet Arctic. However, there are significant limitations due to ice cover and low water that can constrain the potential use of the river system. I don't know whether he coined the phrase "northern pioneering zone", but I thought this phrase supports the notion that the rivers represent the principal mode of transportation in most areas of the Soviet Northeast. The other point to speculate about is what might we see under Mr. Gorbachev. To be consistent with his thoughts on improvement of economic potential and a cooperative nature between organizations, we may see the possibility of more overlap and coordination between Arctic sea and river transport.

As far as my paper is concerned, I believe the buildup of the large number of ice-capable vessels in the Soviet Union would not have been possible without the "Finnish connection". The USSR was simultaneously building its fishing fleet, merchant fleet and navy. So, the Soviet Union's relationship with Finland has been an avenue in which this specialized icebreaker fleet could be obtained. Finland has therefore played a substantial role in the development of the entire Soviet Arctic. These ships are obviously used in direct support of transportatiuon but they have other multi-mission roles such as search and rescue, and military operations. Another observation is that it would appear very difficult to extend the navigation season year-round, at least until the year 2000, because of the extreme ice conditions in the Laptev and East Siberian Seas. Although we hear much about their extending the Northern Sea Route to a year-round operation, it is not currently practical. Individual ships may sail the Route during limited seasons, but as a whole the system is not yet practical and efficient.

Let me make three other propositions: (1) there will be no use of the central Arctic basin for surface navigation in the foreseeable future; (2) use of the Northern Sea Route by ships of Western nations does not appear to be a possibility in the near future; and (3) water transportation (both river and sea transport) is one of the most critical systems in the development of the entire Soviet Arctic.

ROBERT NORTH: You raise the question of cooperation among different forms of transport. Despite the fact that they refer to a unified transport system in all their ideological writings, they have probably had a less unified transport system than most Western countries. Not comparable say to the big transport companies in Canada that have combined, at various times, sea, rail, road and air transport to try to make them cooperate. In the Soviet Union the river transport people are a lobby for river transport rather than better transport. And the same with the rail and sea transport people. If Gorbachev's ideas about increased efficiency are really carried through, then I think the current campaign to make the different transport modes cooperate better is likely to be one thing that is highly pursued. There are few parts of the country where it could be utilized to greater profit than in the Arctic. In Siberia the average number of trans-shipments per ton is 8 compared to 3 over the whole country. I think improved cooperation is likely to be the main path to efficiency in the future.

The other point I wanted to make concerns the sources of initiative and innovation in transport. You (Lawson) mentioned the importance of the Finnish connection for sea transport and new technology. I think river transport is an interesting case. Here we have, as I said, a lobby group which is hanging on to something like 2%-4% of the traffic in the Soviet Union and has been forced to innovate in order to avoid losing more of that traffic. Some of their innovations are very interesting, for example some of the new kinds of vessels they have devised for use on small rivers. There is probably a lot of technological innovation and practice with innovation that could be of interest outside the Soviet Union. Perhaps this is one of the areas where they could export some technology.

GORDON WATSON (East-West Engineering Design Studies): Apart from the military usefulness of passage through the East Siberian Sea and the Bering Strait and the transit of shiploads of grain from Vancouver, do the Soviets, in fact, need to maintain open, for any commercial reason, a complete east-west route across the Arctic? I can't see why.

LAWSON BRIGHAM: The answer is probably no at the present time. However, we should not rule out such a route in the future.

TERENCE ARMSTRONG: I would like to tie that into the prospect of having a route across the middle of the Arctic, something specifically mentioned by the Soviets on a number of occasions. Of course, the stated reason for the voyage of ARKTIKA to the North Pole in 1977 and the two ships the following year was to show that you can shorten the distance by 1300 kilometers at the cost of going through a great deal more ice. This all comes up now because the technical possibilities are there. You could do it if you have enough money. They haven't got the right ships yet. But then there is the question of who wants it? The answer now is nobody but that doesn't mean that nobody will ever want it. It could become part of the pattern in world trade.

MELVIN CONANT: I was intrigued during the discussion that there were references to the total economic cost of the existing system. Is this to be justified, to some extent, on the basis of "we want to do what we will do in the maritime Arctic regardless of cost" or whether there will, in the years ahead, be an extension of more feeder lines in the railway network going across the Soviet Union up into regions now out of reach? Under Arctic conditions, are changes coming in railway transport that the Soviets might apply in very large and innovative ways?

Arctic Science and Technology

LAWSON BRIGHAM: I would like to make a few points on Soviet arctic science and technology. It is obvious there is a substantial body of knowledge regarding the Soviet Arctic within the scientific literature. My observation is that much of it is not recognized nor widely read by most Westerners. There are isolated centers that analyze some of it but it remains a primarily unrecognized body of knowledge that might be of help in solving problems in the North American Arctic.

A good deal of recent effort, that I am aware of, is directly related to ice navigation, transport and the basic sciences, such as the physics of sea ice and remote sensing analysis of the ice in the Arctic Ocean. These obviously tie in with more strategic considerations. Andy (Assur) made a significant point mentioning that the Soviet scientists want to have their works scrutinized. Certainly Soviet scientists want their academic counterparts in the rest of the world to see their work.

In the area of scientific exchanges, clearly the Soviets are willing to have both multilateral and bilateral scientific exchanges regarding the Arctic. However, we can't press them on the Arctic Ocean. We have to deal with them on questions in the broader context of the Arctic.

One last comment - I applaud the persistence of our Canadian friends. Perhaps this is more related to Walter's (Slipchenko) personal involvement over the years. I personally don't believe we have, in the near term, any hope of this kind of scientific exchange between the U.S. and U.S.S.R. regarding the Arctic, even though it might not involve the Arctic Ocean. I am not quite convinced that we are capable of the same kind of broad exchange that Canada has developed. Certainly, we couldn't develop it in the short term, as Canada has done. In the longer term, perhaps we can overcome any reluctance regarding technology exchange and environmental data exchange.

MELVIN CONANT: Is the problem institutional in the U.S.?

LAWSON BRIGHAM: There are a number of different factions, but this must also be the case in Canada.

ANDREW ASSUR: Well, my impression is that the Coast Guard is completely capable of underwriting exchanges.

CHRISTOPHER JOYNER: I just wanted to ask whether we are really serious about arranging scientific exchanges with the Soviet Union. We would have to have a lead person in the Administration take the initiative or be persuaded that the initiative was worth pursuing. I am curious to know who that person would be. Who is the target that you would push this effort on?

LAWSON BRIGHAM: An initiative is certainly not going to come from the operational Navy. They would feel uneasy dealing with questions and exchanges of information regarding the Arctic Ocean.

ANDREW ASSUR: Well, in general, even the Coast Guard has problems because they are trained to obey and would have difficulty taking such initiatives.

LAWSON BRIGHAM: Well, interestingly enough, the U.S. Coast Guard has dealt with the full range of maritime interests around the globe for many years. One could probably say our Coast Guard is the leading maritime organization in the world as far as search and rescue, maritime pollution and marine safety are concerned. We are a leader in the International Maritime Organization (IMO) and have dealt with the Soviet Union on a host of maritime topics of mutual interest. The one area we don't have as much flexibility with is the Arctic since we are sensitive to the interests and concerns of our Navy. However, I do think we could launch into a broad exchange program with the Soviet Union on Arctic transportation, icebreaking technology and general ice operations. It would be a very productive relationship for both parties.

ANDREW ASSUR: You will find considerable sympathy in the Office of Naval Research (ONR) because they are research oriented. As a matter of fact, ONR people were interested in negotiations but did not have the initiative to formally suggest cooperation. Informally, it was done. So ONR is probably interested and is amazingly open.

WALTER SLIPCHENKO: Just two short points on both the exchanges. You will have to find a coordinating agency among yourselves and then you are on your own. We have similar problems in Canada but not to the same scale.

The other point is, and I agree fully with Andy (Assur), almost anything published on the Soviet Union is in the Library of Congress. All you have to do is learn Russian, know your area and you can get up-to-date published information there.

LINCOLN WASHBURN: If I might be allowed a slight digression I would like to add to what Andy (Assur) was saying about the ONR. ONR was here before the National Science Foundation (NSF) and they had special legislation that permitted them to do things that NSF is now doing.

ANDREW ASSUR: And they are still highly professional.

LAWSON BRIGHAM: The U.S. National Science Foundation (NSF) is an interesting agency. For several decades its Division of Polar Programs has focused its efforts on Antarctica and Antarctic science. Hopefully, recent initiatives such as the Arctic Research and Policy Act will permit a greater emphasis on the Arctic. I suggest NSF might be the appropriate U.S. agency to initiate Arctic science and technical exchanges with the Soviet Union.

JAMES BROADUS (Director, Marine Policy Center): Nobody has mentioned a role for the National Academy of Sciences. Is that off to the side? Is there a useful role that could be played in laying the groundwork?

LINCOLN WASHBURN: I could speak to that to some extent as a former chairman of the National Research Council Polar Research Board. Yes, the National Academy operates very effectively in various scientific exchanges, and the Chairman, Frank Press, is very favorably inclined to promote science, where he can, on a cooperative basis. The Academy is sufficiently independent of government to be an objective voice that is heavily relied upon by many government agencies to provide the best science advice available in the country.

Resource Development

MELVIN CONANT: Let us now move to the final topic, Resource Development. We heard from Jim Clarke and regrettably we had to eliminate the paper from Theodore Shabad. It seems to me that matters dealing with resource development do reflect back onto our strategic concerns and it is in that reflection that we (Americans) sometimes trip ourselves up because we look at the economic cost of things as if everyone ought to justify what they do in terms of market forces.

> Proposition One: It is unlikely, perhaps even improbable, that as yet undiscovered, recoverable oil and gas will amount to more than 20 billion barrels or 434 tcf of gas. In view of the cost and probable need, this may not be large enough to exploit by Western standards. Jim (Clarke), I am taking this directly from your paragraph reference to this. I can't contradict you and wouldn't want to try. I think that was a pretty succinct statement you gave.
>
> Proposition Two: The strategic/geopolitical importance of remaining "energy independent" will cause the Soviet Union to continue to search for and develop fields that might go untouched in another clime.

Proposition Three: The "fueling" of the Soviet Far East is still a subject of great importance and hence the development of East Siberian energies will probably take place with an order of priority that would seem unjustified in light of the lesser quantities of oil and gas. This question of the fueling of the Soviet Far East, I guess, is a historic matter beginning with the petroleum era. Now we have a new dimension with natural gas, referred to in one of the questions; is there a grand design on the part of the Soviet Union to use its enormous gas resources to be the energy link of Eurasia. The Japanese are interested in this. They would like to diversify. I am told that there is very little evidence of a grand energy design. This is not to say that the opportunity to be such a link would go unnoticed and the Japanese are aware of that.

Proposition Four: Dr. Shabad's abstract reminds us that resources other than petroleum (nickel, copper, cobalt, and platinum most importantly) are of such importance to the resource independence of the Soviet Union as to justify "the icebreaker fleet". This is unlikely to change and hence looking at the resources of the East Siberia Arctic regions we have to apply totally different standards as to what might be done.

JAMES CLARKE: I would like to make one comment about the gas in East Siberia in the Vilyuy Basin. Back before the Afghan war I understand that they had to prove 35 tcf before they could develop and they were very close to that. The gas was going to be developed and shared by the Japanese and El Paso Gas, fifty-fifty. If you look at a map of the Soviet Union, you will see that that gas is much too far removed from the rest of Siberia, let alone European Russia, to ever go west. That gas is western world gas. Now, they have produced it for local use and once they do produce it, and they will sometime, it will come into the Western market. That is something to keep in mind. There will be gas.

JAMES BROADUS: Are you suggesting then that the Soviets will act more rationally in the treatment of their resources and trade than the United States and not impose the same kind of restrictions for energy independence as the United States has done with respect to the Alaskan oil and gas resources?

JAMES CLARKE: I think that their record in the international oil market has been one to make money. They, I am sure, will act in that way. There won't be any keeping it at home. They will sell everything they find. They are excellent businessmen.

MELVIN CONANT: But would you agree that this instinct of greed which we all share will come after the fueling of the Soviet Far East?

JAMES CLARKE: The Soviet Far East, I think, is going to have enough energy for itself. The oil off Sakhalin and the gas they are developing around the Sea of Okhotsk is going to be enough to satisfy them, with an excess going to Japan. Siberia, I think, is endowed with natural resources. It is in their operations where they mess things up.

MELVIN CONANT: I was told that the development of these East Siberian energy resources would have happened quite a while ago had it not been for the Japanese who didn't want to become involved without a large American presence, presumably in the form of an oil and gas company. The Japanese are moving towards an agreement to exploit resources in addition to coal.

TERENCE ARMSTRONG: Occi was in there.

MELVIN CONANT: Nobody quite puts Occidental in the category that one would put one of the other big companies.

ANDREW ASSUR: But not without the participation of the big oil companies and other financial interests will we see heavy development in the Eastern region.

MELVIN CONANT: If this process should continue over the next 10-15 years, there will be quite large undertakings just to be involved and then the extension of the MSR to the Far East might gain an economic purpose, not now evident.

ANDREW ASSUR: If I can briefly respond to your proposition two where you say that there is no evidence that the Soviet Union has a grand plan for being the energy supplier to Europe and Japan, I don't think it is correct. If you have the opportunity to go to Academgorodok, which is a city in Siberia, you will get a presentation of their plans as far as energy development is concerned. It is quite a presentation they make.

TERENCE ARMSTRONG: Just a point in connection with your proposition arising from Ted Shabad's contention that non-hydrocarbon resources in the Arctic Ocean were going to be important. I wonder, if we do get a paper from him, whether he thought that that situation justifies the huge building program of ships that are obviously going to be usable for that sort of thing.

ROBERT NORTH: On your suggestion that the Japanese might be moving toward involvement in Siberian development. L. Dienes, who was mentioned earlier, is a writer on Siberian resources and recently spent several months in Japan exploring this question. He has been writing since he came back that the Japanese have backed off from this kind of interest because of a lack of need of the resources, as they see it, and exasperation with the kind of business dealings that they have had with the Soviets in the past.

JAMES CLARKE: What do you think of East Siberian coal?

MELVIN CONANT: This has been of longstanding interest to the Japanese.

ANDREW ASSUR: Well, so far as coal is concerned, I was in East Siberia and saw the surface mining operation, which to a considerable degree was a Japanese project. Not only Japanese but American companies, one way or another, manage to get in there as well as Canadian financial interests. This is not generally known but it works. The deposits are enormous and easy to reach by surface mining.

MELVIN CONANT: I would now like to turn to Lawson (Brigham) for his conclusions.

LAWSON BRIGHAM: I have just a couple of closing points. We have spent considerable time discussing the strategic and economic value of the maritime Arctic to the Soviet Union. Security is clearly a paramount concern in the minds of the Soviet leaders and this was a critical point highlighted throughout our discussions. It may be well to ask whether the Soviet Union is today the dominant nation in the Arctic region? This is a question I wrote in a proposal for a workshop to Jim (Broadus) several months ago. I believe from our discussions the answer is clearly yes from a number of viewpoints - strategic, economic, geographic, historic, technological, legal, and scientific. It is my judgment the Soviet Union will remain in this dominant position into the next century. I also found particularly revealing the significant applications of science and technology to the Arctic and the Arctic Ocean that have been accomplished by Soviet scientists and engineers.

I thank all of you for making this a very successful workshop. I sense approaching the problems of the Soviet Union and its relationship to the Arctic Ocean is best done in an interdisciplinary forum such as we had here. The discussions were stimulating and productive because of the diverse, but highly relevant topics. It is obvious to me, as well as to all of you, that anyone with polar interests in any particular discipline would benefit greatly by studying and analyzing the importance of the maritime Arctic to the Soviet Union.

My thanks are extended to the John D. and Catherine T. MacArthur Foundation and the Marine Policy Center of the Woods Hole Oceanographic Institution for making this important Workshop possible.

APPENDICES

Appendix I - Final Program/Schedule

Appendix II - List and Addresses of Participants

Appendix III - List of Submitted Discussion Questions by Session Topic

APPENDIX I

FINAL PROGRAM

SOVIET MARITIME ARCTIC WORKSHOP

Woods Hole Oceanographic Institution
Carriage House, Quissett Campus
May 10-13, 1987

Monday, May 11, 1987

0800-0830	Continental Breakfast
0830-0850	Welcome and Introduction

Session I - Introductory Perspectives

0850-0930	"The Arctic Ocean in Russian History to World War II" WILLIAM BARR
0930-1010	"The Arctic in the Russian Identity" FRANKLYN GRIFFITHS
1010-1025	COFFEE BREAK
1025-1100	DISCUSSION: Session I Leader: T. Armstrong

Session II - Legal Issues and Boundary Problems

1100-1150	"The Legal Regime of the Soviet Arctic" WILLIAM BUTLER
1150-1300	LUNCHEON
1300-1340	DISCUSSION: Session II Leader: L. Washburn

Session III - Strategic and Geopolitical Concerns

1340-1420	"Soviet Military Objectives in the Arctic Theater" CHARLES PETERSEN
1420-1435	COFFEE BREAK
1435-1515	"The Geostrategic Conditions of Deterrence in the Barents Sea" WILLY ØSTRENG
1515-1555	"International Cooperation in the Arctic: Soviet Attitudes and Actions" ORAN YOUNG AND GAIL OSHERENKO
1555-1610	BREAK

1635-1710 "A Comparison of Soviet Arctic and Antarctic Policies"
CHRISTOPHER JOYNER

1710-1750 DISCUSSION: Session III
Leaders: N. Ostenso and L. Brigham

Tuesday, May 12, 1987

0800-0830 Continental Breakfast

Session IV - Arctic Marine Transportation

0830-0910 "Northern Sea Route Operation in the 1986-87 Season"
TERENCE ARMSTRONG

0910-0945 "Use of the Siberian Rivers as a Transportation System"
ROBERT NORTH

0945-1000 COFFEE BREAK

1000-1035 "Technical Developments and the Future of the Soviet Arctic Marine Transportation System"
LAWSON BRIGHAM

1035-1115 DISCUSSION: Session IV
Leader: C. Lamson

Session V - Arctic Science and Technology

1115-1155 "Soviet Arctic Science and Engineering"
ANDREW ASSUR

1155-1300 LUNCHEON

1300-1335 "Canada-Soviet Arctic Science Exchanges"
WALTER SLIPCHENKO

1335-1410 "A Review of Innovative Soviet Arctic Technology"
GORDON WATSON

1410-1445 DISCUSSION: Session V
Leader: G. Weller

1445-1500 COFFEE BREAK

Session VI - Resource Development

1500-1540	"Oil-Gas Resources of the Soviet Offshore Arctic" JAMES CLARKE
1540-1600	BREAK
1600-1715	DISCUSSION: Session VI Leader: M. Conant
1900-	Workshop Dinner at the Coonamessett Inn, Falmouth Speaker: W. Østreng

Wednesday, May 13, 1987

0830-0900	Continental Breakfast
0900-0930	DISCUSSION: Workshop book, timetable for papers, additional contributors, base map

Session VII - Summary Discussion

0930-1210	"The Future of the Soviet Maritime Arctic" M. CONANT/L. BRIGHAM/T. ARMSTRONG
1210-1215	Closing Remarks.

APPENDIX II

SOVIET MARITIME WORKSHOP
Woods Hole Oceanographic Institution
May 11-13, 1987

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APPENDIX III

SESSION DISCUSSION QUESTIONS

Prior to convening the Workshop potential discussion questions were solicited from the participants. Fifty questions were received and they are arranged according to workshop session. These questions reflect the broad range of interests of the participants and they were helpful in guiding the discussions following each of the seven sessions. They are listed here as a guide to future research questions on the Soviet Maritime Arctic.

Session I - Introductory Perspectives

1. How mindful are Soviet strategists of the Russo-Japanese War (and the need for the Navy to sail around Asia)? Is this memory conceivably still the primary reason for the emphasis in 1987 for the Northern Sea Route?

2. How much of the immense Soviet Pacific fleet has used the Northern Sea Route in the past?

Session II - Legal Isues and Boundary Problems

1. What safeguards exist (or procedures) to deal with a nuclear accident in the Arctic Ocean?

2. In many parts of the world conflicting boundary claims with potential oil/gas reserves have been settled easily and quickly. Is the Bering Sea a "make work" dispute of no petroleum importance?

3. Canada and the Soviet Union have recently drawn controversial straight baselines in the Arctic. Who followed whom and how are these actions related? How consistent with past Soviet policy towards straight baselines is this action?

4. What is the status of Soviet-Norwegian negotiations on continental shelf delineation in the Barents Sea? Will the Soviets attempt to delay Norwegian energy operations in the disputed zone?

5. Do Soviet attitudes toward the law of the sea continue to reflect fundamental maritime capabilities and policies?

6. How have Soviet attitudes toward the Law of the Sea Convention altered in light of the United States refusal to sign the convention?

7. Regarding the drawing of straight baselines around the Soviet Arctic archipelagoes, what is the legal argument being advanced by the USSR? Is it based, at least in part, on Article 234 of the Law of the Sea Convention?

Session III - Strategic and Geopolitical Concerns

1. How have advances in strategic weapons' long-range capabilities altered Soviet use of the Arctic region? (Same question for the United States - how advances may have changed U.S. uses of the Arctic and thus Soviet defenses?)

2. What is the geostrategic importance of the Arctic in wartime, and how could control of this theater affect the situation in adjacent theaters?

3. How significant is the Arctic Ocean as a naval theater of operations, aside from the Barents Sea bases, compared with the Atlantic and Pacific theaters? Is the development of nuclear-powered icebreakers and Soviet cargo-carrying capacity in Arctic coastal shipping any threat to the West?

4. In the near future the Soviet Union will operate a virtual armada of nuclear ships in the Arctic Ocean (both submarines and surface ships). What does this capability in terms of "maritime presence" portend for the West?

5. What are the Soviet intentions for Greenland?

6. Will the increasing militarization of the Arctic increase or decrease Soviet interest in international cooperation in the region?

7. Future resources in and around Svalbard might jeopardize the stability of the Svalbard Treaty. What might be future Soviet approaches to this region of the Arctic?

8. To what degree do geopolitical concerns of the USSR shape its development of the legal regime in the Arctic? Is the USSR attempting, through legal means, to limit foreign presence in the Arctic? How?

Session IV - Arctic Marine Transportation

1. Is there a future for surface navigation in the central Arctic basin?

2. Will non-Soviet shipping use the Northern Sea Route in the future?

3. To what extent has use of the Northern Sea Route in the past been facilitated or hampered by changes in climate and hence in sea ice conditions? What extent may such changes play a role in the future?

4. May one assume that the voyage of the icebreaker POLAR SEA through the Northwest Passage in the summer of 1985 and the Soviet response to that voyage were prompted as much by American interests in the Northern Sea Route as in use of the Northwest Passage?

5. What is the kind of cargo destined to make investment in the Soviet Arctic transportation system defensible versus other claims on the Soviet economy? Why is there not greater emphasis on trans-Siberian rail systems, or is the real need for ocean use primarily defensive?

6. To what extent can the growth of the Soviet Arctic merchant fleet be interpreted as opportunistic empire-building by a ministry confident of support from the military for such a venture?

7. To what extent is the Soviet Arctic merchant fleet used for the purposes for which it was built? (A question arising from the known regular use of the SA-15 vessels based in the Far East, and the ALEKSEY KOSYGIN, to carry Canadian grain to Nakhodka.)

8. In time of general war would there be a need for supplementary forces to use the Northern Sea Route system?

9. What advances have been made recently in the area of port development (river and sea) in the Soviet North? Is lack of port capacity still one of the major contraints on the expansion of river and sea traffic in the North?

Session V - Arctic Science and Technology

1. What are the current and future Soviet research plans regarding the Arctic Ocean (i.e., ice islands, deep sea drilling, etc.)?

2. What are the prospects of future scientific cooperation with the Soviets regarding the Arctic Ocean (i.e., "Fram" drift, etc.)?

3. What international scientific organization for the Arctic could be created (e.g., a SCAR for the Arctic) in which the Soviets would participate?

4. Is there a reasonable likelihood of the Soviets participating in "Arctic haze" research or other environmental matters requiring international cooperation in the Arctic?

5. What are the prospects of interesting the Soviets in international cooperation to cope with marine pollution in the region arising from industrialization or air pollution (both associated with long-range transport problems)?

6. What are the possibilities for developing bilateral or multilateral research programs with the Soviet Union in the Arctic Basin? What are the current or future administrative channels and international organizations for this cooperation to take place?

7. What are the possibilities for joint US-USSR research in the Bering Sea?

8. What is the current level of Soviet satellite technology? How might this technology impact on Soviet transportation, resource development, defense and research in the Soviet Maritime Arctic?

9. The USSR has encountered numerous systemic problems in putting its basic scientific and technical knowledge into practice. This has given rise to opinions that the USSR is generaly proficient in the area of basic research but sub-standard in development and application of new technologies. Is this true of Arctic-related R&D in the USSR?

10. How much of the Soviet R&D effort in Arctic-related areas is being devoted to environmental studies? Is there a growing concern in the USSR about the Arctic environment? Is the current concern about building a railway on the Yamal Peninsula a sign of a heightened awareness of the environmental impact of large-scale industrial development?

Session VI - Resource Development

1. What are the likely effects of Gorbachev's efficiency drive on (a) Northern development in general and (b) transport development in the North?

2. Does the Soviet economic system allow development of oil fields that would not be developed in a free economy?

3. Why are the Soviets so slow in exploring the potentially rich Barents Sea for oil?

4. What will be the future relationship between Japan and the Soviet Union regarding the development of the Siberian Arctic bordering on the Pacific?

5. What will be the future emphasis on resource development in the Arctic, considering that the new economic policy is designed to reduce resource input per unit of output and that the interest in costly large resource development projects is declining?

6. Does Soviet experience in developing the Arctic have any relevance to development of the Canadian Arctic?

7. Apart from the obvious examples of the oil and gas sectors, are there other indications that the Soviet North (or Arctic) is receiving a larger share of total capital investment for natural resource development than it was 10-20 years ago? If so, how significant an impact will this have on the economy, given the higher costs of production in the North and the need for more infrastructure?

8. How does the Soviet military contribute to development in the Soviet North? What portion of the Soviet military budget goes toward northern development through the provision of roads, communications and other infrastructure?

Session VII - Summary Discussion/The Future of the Soviet Maritime Arctic

1. Development of the Soviet Maritime Arctic during the 1990s and into the next century will require huge capital investments. Is it necessary that the Soviets develop the region considering that the expenditures will be so large?

2. What will be the Soviet emphasis on Arctic development under the Gorbachev administration, considering that the emphasis on Siberian and northern development is lessening in favor of greater interest in the modernization of existing industry (concentrated in the European USSR)?

3. Does the apparent liberalization taking place under Gorbachev have sigificant implications for Soviet attitudes toward international cooperation in the Arctic?

4. What are the implications of the emergence of the Arctic as an important international region for Soviet attitudes toward international cooperation in the Arctic region?

5. Could the future resource development (oil and gas) of the Soviet Maritime Arctic be part of a grand Soviet scheme to gain a greater share of the world energy market in the next century?

6. Has the "greenhouse effect" of the ever increasing levels of carbon dioxide in the atmosphere yet caused any noticeable decrease in the extent or thickness of ice along the coastal strip of the Arctic Ocean? Is the progressive melting of the Pole going to influence ice conditions along the Northern Sea Route enough to affect the passage of ships along it, in the foreseeable future?

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16. Abstract (Limit: 200 words)

This report is a summary of an international workshop on the Soviet Maritime Arctic held May 10-13, 1987 by the Marine Policy Center of the Woods Hole Oceanographic Institution. Twenty-eight scholars from Canada, Great Britain, Norway and the United States participated. The workshop provided a forum for Western scholars to examine and discuss Soviet domestic and international policies regarding the Arctic Ocean. Interdisciplinary workshop sessions addressed the following concerns: strategic, geographic, historical, legal, scientific, technological, transportation, geopolitical and resource development. This report includes an overview of the workshop, 15 abstracts of contributed papers (8 with figures or tables), and an edited transcript of the concluding discussion session. Appendices include the final program, a list of participants and a list of discussion questions contributed by the participants prior to the workshop. Several key findings of the workshop include: more than 500 years of Russian involvement in the Arctic Ocean; USSR operation of the world's largest polar fleet primarily for transportation and resource development; Russian nationalism as a possible driving force in Soviet activity in the Arctic; Soviet concerns for the Arctic representing an amalgamation of interests (economic, security, environmental, resource, others), none of which alone is predominant; probable Soviet participation in international Arctic regimes based on past actions; and, Soviet legislative enactments which indicate that the balance of interests embodied in the Law of the Sea Convention are largely acceptable to the Soviet Union and that extreme doctrinal views on the legal status of polar seas do not enjoy support in law or State practice.

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3. marine policy
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